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EDWARD J. RYAN, B.S., D.D.S., *Editor*

ETHEL H. DAVIS, A.B., *Assistant Editor*

708 Church Street, Evanston, Illinois

About Our CONTRIBUTORS

I. Franklin Miller, B.S. (1935), M.A., D.D.S. (1936—all at the University of Pittsburgh) has previously contributed to the dental literature. The photographs for the present article were taken and arranged specifically for The Digest by Homer and Dorothy Sterling. Doctor Miller is a general practitioner.

Louis W. Schultz, D.D.S., B.S., M.D. (1920, 1922, 1928 respectively, University of Illinois) has on three previous occasions contributed to these pages, the last time in February, 1940 when he described A New Operation for Bilateral Cleft Lip. In this issue the Surgical Correction of Labial and Lingual Frena considers the question of surgical intervention, its indications and contra-indications; the methods of surgical correction; and postoperative treatment. Doctor Schultz who specializes in oral surgery in private practice is on the staff of the department of surgery, University of Illinois, College of Medicine as well as the College of Dentistry, and is attending oral surgeon to the Illinois Research and Educational Hospital, The Presbyterian Hospital, Children's Memorial Hospital, and West Suburban Hospital.

A. Laurence Dunn, A.B., (1917) and D.D.S. (1923, University of Southern California) illustrated an article by E. D. Shooshan of Pasadena, California which appeared here in December, 1936. These excellent illustrations resulted in two authorships of his own for The Digest: A Safe Transitional Partial Denture and Planning Invisible Margins for Anterior Bridge Abutments in February and July, 1939, respectively. The illustrations for Restoring Lost Inlay Contact in this issue are reproduced from prints made from Kodachrome originals by Doctor Dunn.

Lewis Wayne Law received his D.D.S. at The University of Minnesota School of Dentistry in 1938. For two years he was associated with George W. Reynolds, University of Minnesota School of Dentistry professor and co-author of a text on crown and bridge. Doctor Law who is a general practitioner is at present studying medicine at the University of North Dakota School of Medicine. This is his first Digest publication.

Hyman Freedman received his D.D.S. from the College of Dental and Oral Surgery of New York in 1921. Doctor Freedman is a general practitioner who has written for us on two previous occasions: In January, 1932, he presented The Solderless Movable Fixed Bridge and in September, 1935, an article on Close Bites and Doubtful Abutments in Fixed Bridgework. Magnetic Counter-Influence in Full Lower Denture Retention may offer the long sought solution to the problem of lower denture stability.

Henry Fischer, D.D.S. was graduated from the New York University College of Dentistry in 1933. In October, 1936, he contributed a clinical comment to this magazine on Reversing X-Ray Negatives, and in January, 1938, he discussed Light and the Camera.

Acrylic Jackets

I. FRANKLIN MILLER, M.A., D.D.S., Pittsburgh

OPPONENTS OF THE use of plastics in restorative dentistry give as their reasons the following:

1. Such restorations will warp.
2. The elasticity of the material and the rigid form of the cement will cause the latter to craze under masticatory stress; thus the restoration will become loose.
3. Acrylics will wear.
4. Tissue tolerance of acrylics is questionable.
5. Acrylics will split or chip.
6. Acrylics have no moisture resistance.

After almost two years of clinical experience with methyl methacrylate polymer and a styrene monomer in every conceivable type of dental replacement, I have found no evidence of the validity of the fault-finding contentions. I believe we are in an era of plastics in crown and bridge prosthesis.

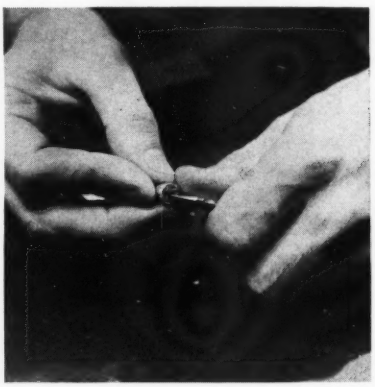
In the case illustrated, the upper left lateral had a large labio-distal gold inlay and recurrent caries. The entire distal of the right cuspid was destroyed by caries, originating from the contact point. The upper right first bicuspid had a large MOD amalgam restoration, recurrent caries, and was discolored.

Jacket crowns were indicated to preserve the teeth and restore esthetics. The accompanying illustrations show the step-by-step technique.

412 *Medical Arts Building.*

1. Teeth prepared in usual manner for jacket restorations. A definite shoulder in all acrylic jacket restorations is required.

2. Tube impression as for any jacket preparation. Note towel clamp as an ideal instrument to facilitate removal of impression without distortion.

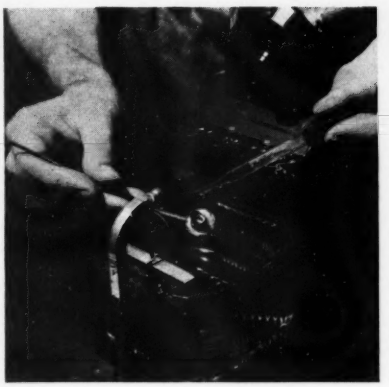


3. In acrylic restorations an accurate die is necessary on which to process. A copper plated die is ideal. Remove excess compound. Expose all the rim of the copper band.

4. Lute copper band to cathode platform with sticky wax.

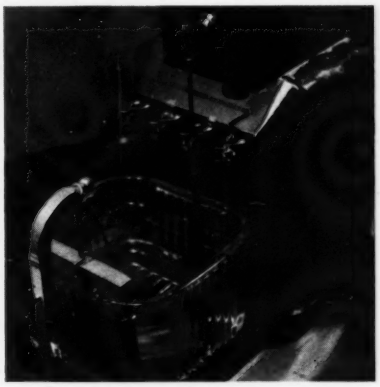
5. Wash impression with 50/50 solution of tincture of green soap and hydrogen dioxide. Dry with air. Wipe liberally with poppy seed oil; blow out excess with compressed air.

6. Vibrate copper bronzing powder over entire interior surface of impression.

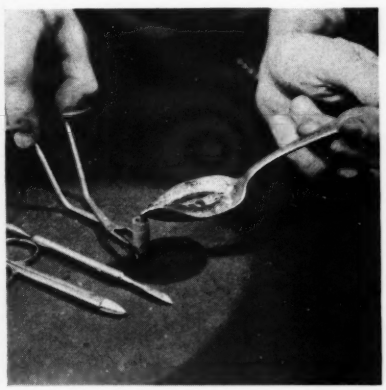


7. With copper sulfate plating solution in medicine dropper, wash out excess bronzing powder until greenish cast appears over surface. Suspend a solution with current flowing for 30 minutes. If necessary repeat steps 6 and 7.

8. Cover exterior of copper band and platform with 28 gauge green casting wax, extending wax 1 mm. beyond edge of band.



9. Replace in solution for 12 hours or more to establish perfect copper plated surface.



10. Remove from solution, wash, and dry. Wrap masking tape around band; pour rose metal to form core.

11. Use coarse carborundum stone to trim die.

12. Place die in impression; cast; articulate.

13. Tin-foil matrix. Tin-foiling facilitates removal of finished case from die. Matrix of .0005 foil.

14. Carve crown in white inlay wax. At this point crown may be tried in mouth to establish correct contact and alignment.

15. Foil the lingual of wax carving, letting foil extend at top and sides.

16. Set in lower half of flask filled with acry-mold. Set at 65° angle (angle is important) and trim excess material from around tooth. Do not cover incisal edge.

17. Foil labial surface of tooth. Burnish the foil with cotton or silk.

18. Coat entire surface of mold with water glass (porseal).

19. Fill top of flask with acry-mold. Close. Boil out wax. Open flask and wash out wax with boiling water. Use carbon tetrachloride (not chloroform) to remove all trace of wax. Cool flask under cold running water.

20. Fill mold with dentine acrylic mix. (A mix-miser measuring spoon will save material.) Cover with wet cellophane.

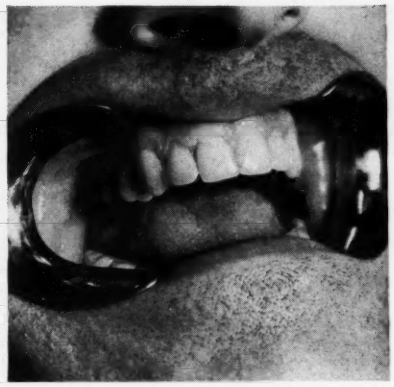
21. Replace top of flask and bring to position in press without applying pressure. Immerse press in boiling water for 45 seconds. Apply pressure by fully closing flask. Leave in boiling water 1 minute.

22. Remove from press. Open flask. Remove cellophane. Trim excess dentine. If necessary, add additional material and repeat steps 20 and 21.

23. Add enamel acrylic mix to incisal edge without removing any dentine unless tooth is unusually translucent at incisal tip—in which case a small amount of dentine should be removed before adding enamel. Remove from press. Open flask.

24. Remove cellophane. Check for color and quantity. Remove excess or add material if necessary. Replace top of flask without cellophane. Place flask in press and boil for one hour.

25. Remove excess material with sandpaper disks. Polish with slow-turning felt wheel, pumice, and tripoli. Use tin oxide for high luster.



26. Jackets cemented in position with crown and bridge cement. The color of cement used should be determined in advance as the shade of the jacket will be influenced by the cement.

CAUTION:
Steps 20 to 23 inclusive must be completed in 9 minutes; after that time, material becomes thermal set and cannot be altered.

NOTE:
The procedure described for jackets may be adapted to bridges and inlays.

Announcement of Books Received

YOUR TEETH: Their Past, Present, and Probable Future, By Peter J. Brekhus, D.D.S., Minneapolis, The University of Minnesota Press, 1941. Price: $2.50.

EFFECTIVE LIVING (164 Illustrations), By C. E. Turner, A.M., Sc.D., Dr.P.H. and Elizabeth McHose, B.S., M.A., St. Louis, The C. V. Mosby Company, 1941.

DENTAL CARIES: Findings and Conclusions on Its Causes and Control, Second Edition, Compiled for the Research Commission of The American Dental Association, By The Advisory Committee on Research in Dental Caries, New York, 1941.

PARADENCIO: PATOLOGIA Y TRATAMIENTO, (The Paradentium: Its Pathology and Treatment) Thoroughly Revised, Second Edition, (764 illustrations; 8 color plates), By Francisco M. Pucci, D.D.S., Mercedes, 1213, Montevideo, Uruguay, 1941. Price: $14.00.

A TEXTBOOK OF DENTAL PHARMACOLOGY, MATERIA DENTICA AND PHARMACO-THERAPEUTICS, *Second Edition*, By William H. O. McGehee, M.D., D.D.S. and Melvin W. Green, Ph.G., B.S., Ph.D., Philadelphia, The Blakiston Company, 1941. Price: $5.00.

PREVENTION OF MALOCCLUSION (217 Illustrations), By Paul Guy Spencer, D.D.S., St. Louis, The C. V. Mosby Company, 1941. Price: $5.00.

CANCER OF THE FACE AND MOUTH: DIAGNOSIS, TREATMENT, SURGICAL REPAIR, (Illustrated), By Vilray P. Blair, M.D., Sherwood Moore, M.D. and Louis T. Byars, M.D., St. Louis, The C. V. Mosby Company, 1941. (See The Editor's Page, this issue.)

WORKBOOK FOR PHYSICAL EDUCATION (73 Illustrations), By Mae Iddins, A.B., B.P.E., St. Louis, The C. V. Mosby Company, 1941.

PROFESSIONAL DENTISTRY IN AMERICAN SOCIETY (Illustrated), By Alfred J. Asgis, Ph.D., D.D.S., New York, Clinical Press, 1941. Price: $4.50.

A STUDY OF THE DENTAL NEEDS OF ADULTS IN THE UNITED STATES, By Raymond M. Walls, D.D.S., Samuel R. Lewis, Melvin L. Dollar, The Economics Committee of the American Dental Association, 1940.

THE ART AND SCIENCE OF NUTRITION: A Textbook on the Theory and Application of Nutrition (140 Illustrations, 12 in color), By Estelle E. Hawley, Ph.D. and Grace Carden, B.S., St. Louis, The C. V. Mosby Company, 1941. Price: $3.50.

Surgical Correction of Labial and Lingual Frena*

LOUIS W. SCHULTZ, D.D.S., M.D., Chicago

DIGEST

Because the abnormal attachment and variation in length of the labial and lingual frena influence the mobility of the organs to which the frena are attached, the question of surgical intervention is answered with indications and contra-indications for surgery. The methods of surgical correction are briefly listed and the technical procedure is illustrated.

THE SUPERIOR LABIAL frenum and the lingual frenum have been under considerable discussion because of their abnormal attachment and variation in length. Their influence on the mobility of the organs to which they are attached presents many problems.

Probably the type of frenum most frequently seen by the dentist is the one causing separation of the upper central incisor teeth. The frenum may or may not be responsible for the separation of these teeth, and I feel that nothing should be done to the frenum during the primary dentition in the majority of cases or even during the secondary dentition until the child is about 9 or 10 years of age. At this time the space between the centrals should show signs of closing.

Indications for Surgery

There are two schools of thought regarding the question of surgical intervention: One teaches never to operate, the other is always ready to operate. There are definite reasons for and against operation:

*Department of Surgery, University of Illinois, College of Medicine, and College of Dentistry.

Fig. 1—Superior labial frenum with heavy muscular attachment on palatal surface.

Fig. 2—Muscle dissected from palatal surface. Arrow points to muscle.

1. Obviously a superior labial frenum with a deep lingual attachment and a heavy muscle extending between the teeth must be dealt with surgically as illustrated in Figs. 1, 2, 3, and 4.

2. A frenum with a short attachment labial to the centrals is not an indication for surgery.

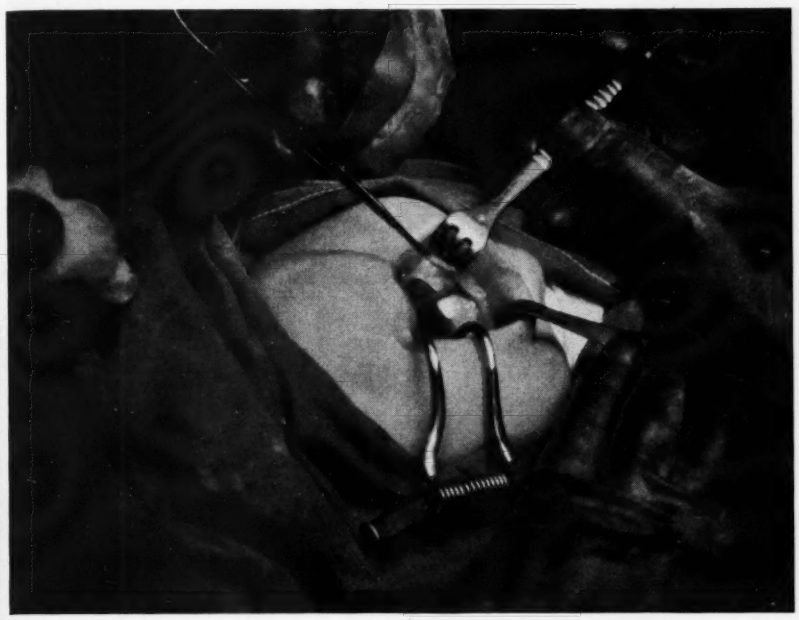


Fig. 3—Muscle and frenum anterior to incisor teeth dissected free from bone.

3. A superior labial frenum that is so short as to produce a notching of the upper lip should receive surgical attention—naturally so, because (Fig. 5) of the facial defect.

4. When coordinating movements between the lip and the tongue interfere with speech because of the immobility of the central portion of the upper lip, surgery is indicated. The fine coordinated movements between lip and tongue at times may necessitate the lengthening or excision of the lingual frenum when interfering with the mobility of the tongue. Many articulatory defects can be corrected early in life by noting the freedom of movement of the tongue and correcting the lack of it if it is present. The tongue-tied condition of infants often presents another handicap in interference with feeding, principally nursing. The act of swallowing also necessitates a certain amount of freedom of the tip of the tongue; hence, this act may also cause symptoms of interference with articulation and feeding.

5. Elderly persons wearing full dentures occasionally are seriously handicapped by lingual or labial frena. The upper frenum with a low attachment may produce a break in the seal of the denture or give rise to a laceration in that region and thus may cause a constant unseating of the denture. The lingual frenum likewise may unseat a lower denture and may become the seat of pressure necrosis, and, therefore, is best corrected by surgical means.

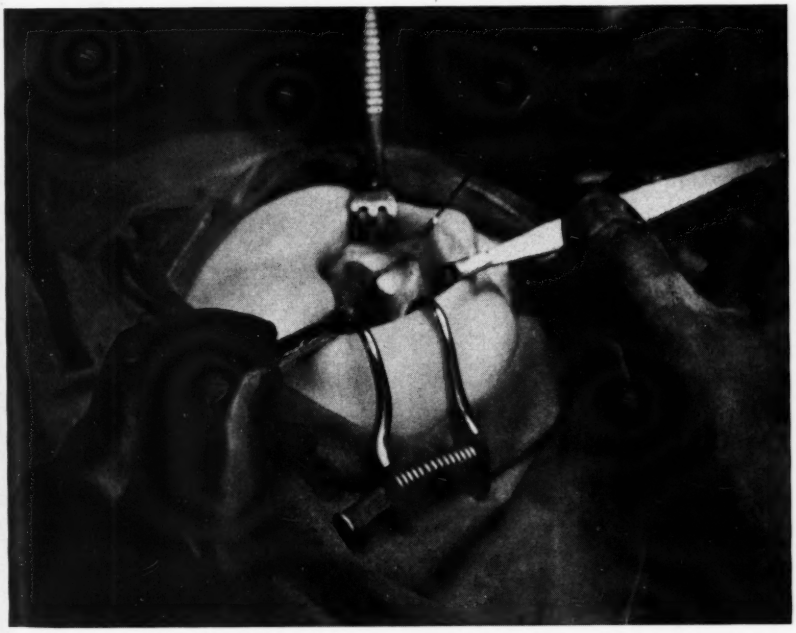


Fig. 4—Labial surface of wound closed with mucous membrane flap. Lingual surface left open and allowed to granulate.

Methods of Surgical Correction (Figs. 6 through 11)

Correction at Birth—Surgical correction at birth may be a simple matter of cutting the frenum and stretching it with the fingers.

Fig. 5—Deformity caused by extreme case of short superior labial frenum.

Correction of Short Frena—The operation for the correction of short frena may likewise be as simple as the correction at birth: cutting the frenum with a simple snipping with scissors and stretching it with the fingers. In more advanced cases presenting a heavy short frenum, a more detailed plastic correction is advisable:

a) The usual correction for the frenum of the upper lip is done by making a narrow V-shaped incision including the entire attachment of the frenum to the bone.

b) The frenum is detached completely from the bone and the opening stretched to a long vertical slit parallel to the long axis of the midline of the body.

c) This slit is closed with interrupted dermal or catgut sutures, so that there

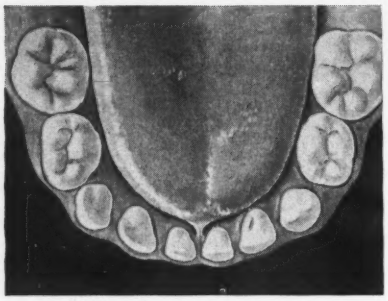


Fig. 6—Lingual frenum producing complete immobilization of tongue.

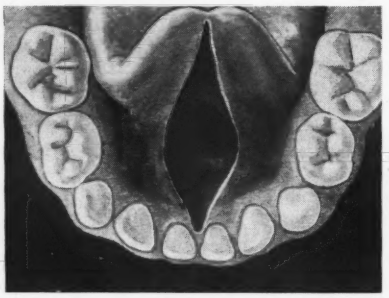


Fig. 8—Mucous membrane flaps after complete dissection of the fibrous connective tissue which tied the tongue to the floor of the mouth.

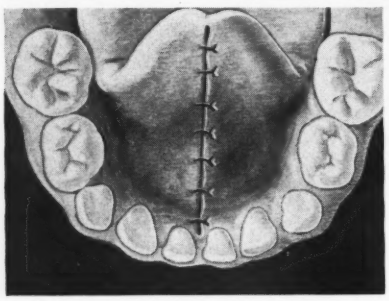


Fig. 9—Tip of tongue reflected upward and backward and wound closed with interrupted catgut suture material, producing normal mobility of tongue.

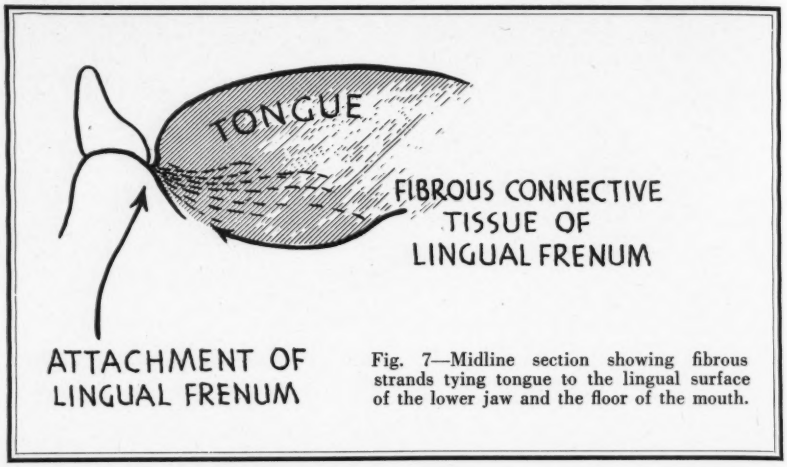


Fig. 7—Midline section showing fibrous strands tying tongue to the lingual surface of the lower jaw and the floor of the mouth.

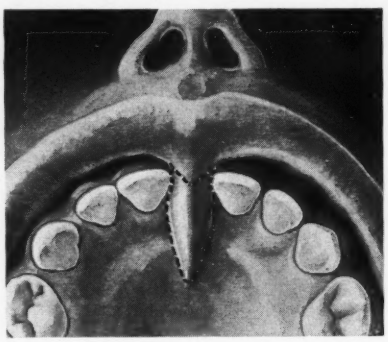


Fig. 10—Dotted lines show incisions made to complete the dissection of the superior labial frenum.

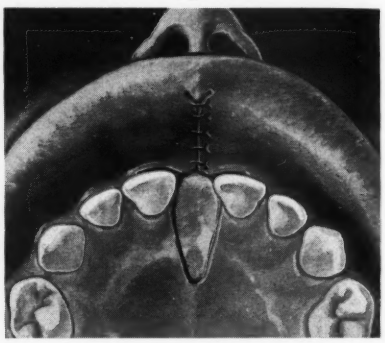


Fig. 11—Labial portion of wound closed with interrupted catgut suture material. Palatal surface left exposed to heal by granulation.

will not be any raw surface exposed.

d) When the muscle belly is heavy, naturally it should be completely dissected from the palatal and alveolar ridge surface, and the labial mucous membrane should be closed. The raw surface remaining on the ridge and palatal surface cannot come in contact with the lip. This will give a deep vestibule and freely movable lip.

The lingual frenum is dealt with similarly to the superior labial frenum in that the entire frenum is removed and the mucous membrane of the floor of the mouth and adjacent surface of the tongue are so closed as to give a long freely movable body of the tongue.

Postoperative Treatment

Postoperative treatment consists of massage started two or three weeks after healing has taken place. Stretching will also be beneficial and improve the end-result.

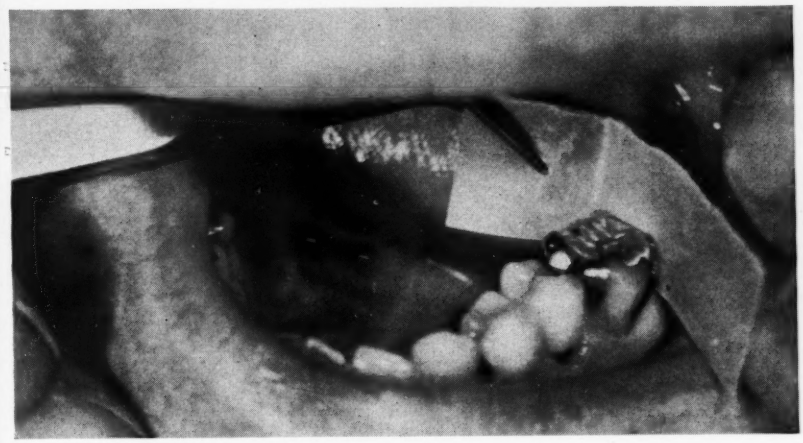
25 *East Washington Street.*

Unsolicited Manuscripts

FROM TIME TO time THE DENTAL DIGEST receives inquiries regarding its attitude toward unsolicited manuscripts. These are especially welcome. There are many excellent dentists who have original suggestions, who have improved or modified a technique or have refined an operation; but these men do not contribute to the literature because they are afraid they do not know how to "write." Dentists are not expected to be "writers." If they will tell their stories in a straightforward manner, the editors will be happy to cooperate with them in presenting their material. Unsolicited manuscripts sent to THE DENTAL DIGEST are read with care and open-mindedness and are reported on promptly.

Restoring Lost Inlay Contact

A. LAURENCE DUNN, D.D.S., Santa Barbara, California



Figs. 1 and 2—Slipping a piece of paper between two lower molars to demonstrate loss of proximal contact. (These and the following photographs are reproduced from prints of Kodachrome originals.)

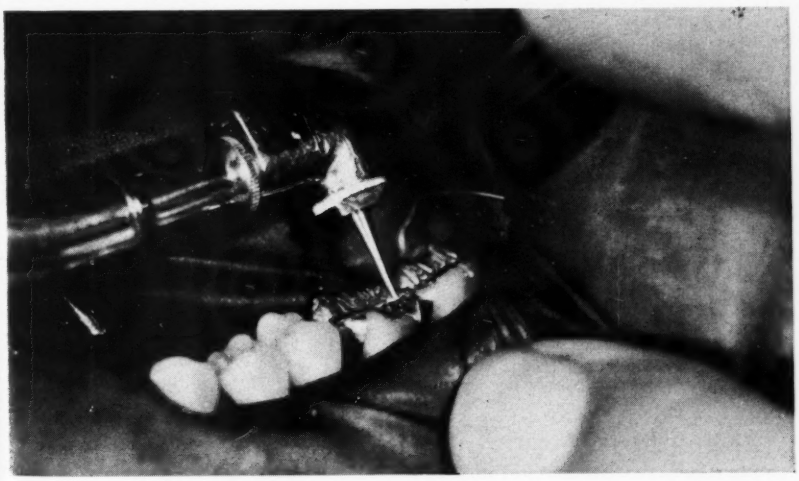


Fig. 3—To correct loss of contact (provided a good inlay is present) the rubber dam is placed and a slot is cut within the gold.

FREQUENTLY TEETH drift and permit the opening of proximal contact. Although normal contact may have existed for many years or for only a short time, a disturbing and dangerous change can occur. Where formerly there was efficient and comfortable function with no trace of interproximal trapping of food, now one or more teeth may have shifted just enough to open contact. The result is that every time fibrous foods, such as celery, chicken, ham or beef are masticated in that region, some of the fibers are forcibly driven between two or more of the teeth. The food cannot be removed with the tongue but remains wedged there until dislodged with floss, toothpick, or the edge of a sheet of paper. Such a loss of proximal contact, which is frequently more treacherous than the loss of an entire tooth, must be rectified.

At times there exists at the site of such a packing of food a well-placed inlay. Let us assume that such an inlay is present and that the only justifica-

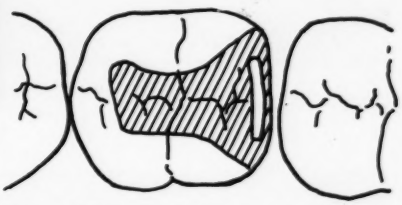


Fig. 4—Diagram of cross section showing how slot is cut into inlay. Note particularly that the thin distal wall remains intact.

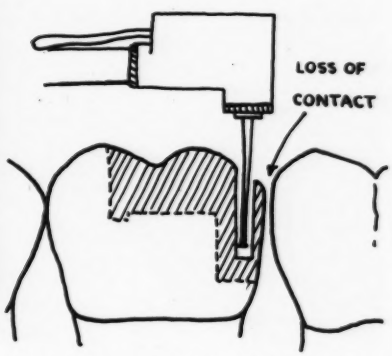


Fig. 5—Diagram of occlusal view also shows form of slot and preservation of proximal wall.

Fig. 6—Here is a closer view of the actual shaping of the slot.

Fig. 7—A suitable instrument, possibly an amalgam plugger, or a broken spoon excavator is used as a wedge.

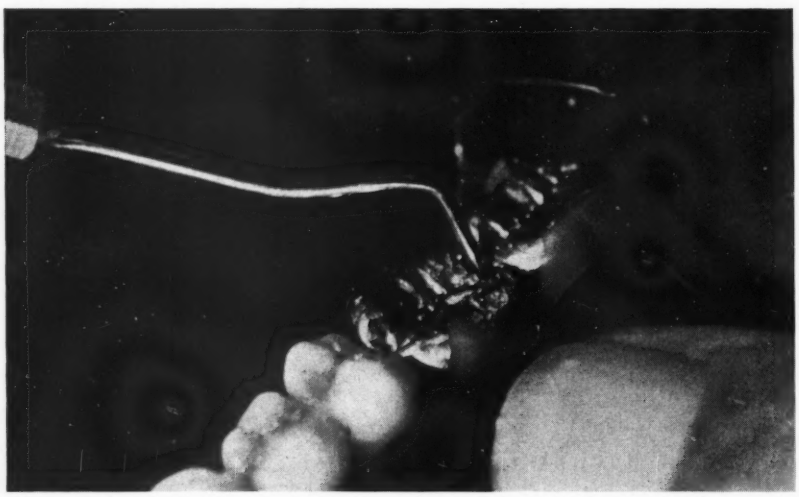


Fig. 8—Wedging instrument is forced into slot, adapting the thin wall of gold snugly against its neighboring tooth.

tion for removing it would be to replace it with one with a fully restored contact. Assuming further that the inlay is substantially set in the tooth, that it has been checked roentgenographically and by exploration, and that its occlusion is correct or is corrected—then the following technique can be employed to restore the lost contact:

Technique

1. Check the lack of contact (Figs. 1 and 2), either with dental floss or as shown in the illustrations with a strip of paper.

2. Apply a rubber dam and drill a slot in the gold just short of the marginal ridge and parallel to it (Fig. 3). Deepen this slot to approximately 2 mm. and carry it buccally and lingually (Fig. 6) in such a manner that there results a thin unbroken wall of gold adjacent to the neighboring tooth. This wall of gold, the distal surface of this inlay, is reduced to the thickness of a fingernail, but is not penetrated.

3. Force any suitable instrument into the narrow slot or well and contour the distal wall of the inlay into a snug contact with the neighboring molar. Manipulate it until the patient recognizes a slightly wedging effect. Check the contact with dental floss. Fig. 7 shows an amalgam plugger, which can be used, and Fig. 8 pictures its being applied to the slot or well.

4. Fill the slot with gold foil (Figs. 10 and 11). Here a Hollenbeck gold foil condenser is being used.

5. Finish off with burs (Fig. 12).

6. Remove the rubber dam. Contact is now restored (Fig. 13).

If as the years go on, contact is again lost, the same well can again be opened and contact can again be restored without loss of the inlay.

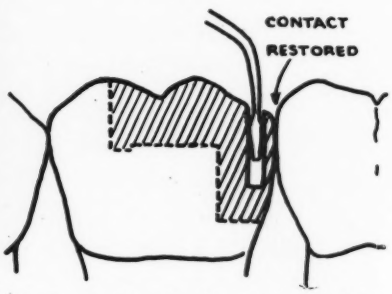


Fig. 9—Diagram showing result of wedging an instrument into slot, correctly restoring contact.

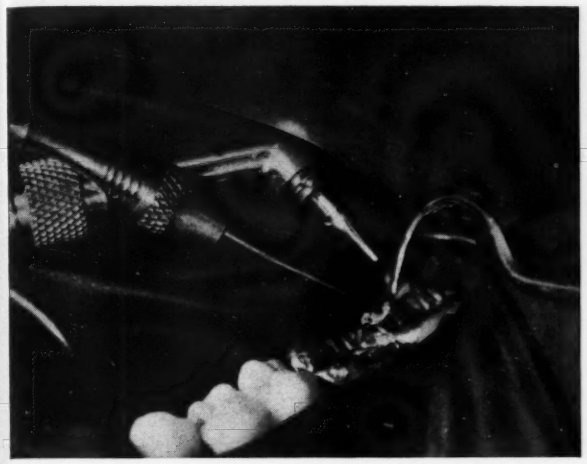


Fig. 10—With a foil condenser, gold foil is now malleted to fill slot.

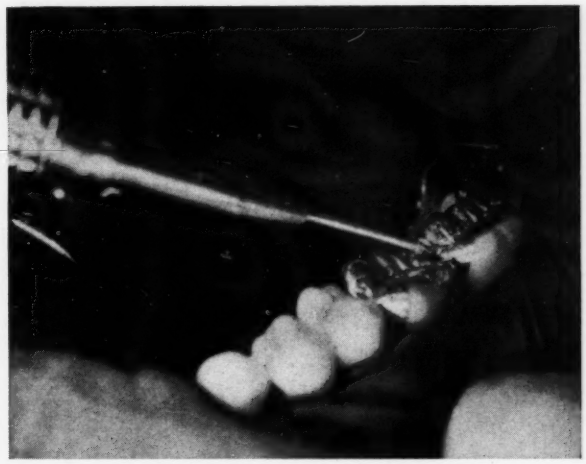


Fig. 12—Any excess gold foil is finished off with a bur.

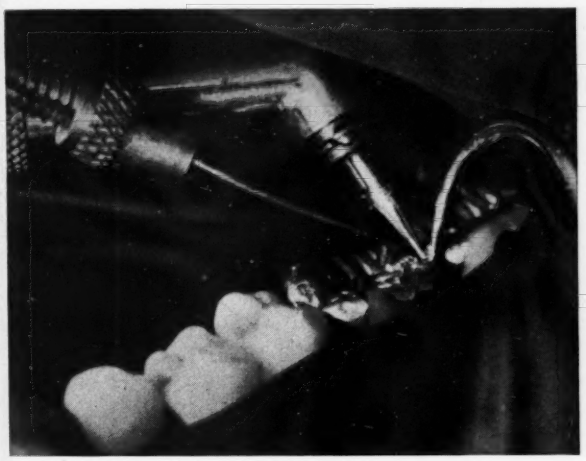


Fig. 11—Gold foil being condensed.

Fig. 13—Checking restored contact with a ligature. (Compare Fig. 2) A good inlay has been preserved simply and rapidly.

Precautions

There are three precautions to observe:

1. Do not use this technique in thin inlays.

2. In forcing the instrument into the slot or well, use a pressing force, not a twisting motion which would risk loosening the inlay.

3. Force enough of the thin wall into contact with the neighboring tooth to give the correct form of contact as well as the correct degree.

EDITOR'S NOTE:
We welcome and are prepared to handle Kodachrome slides for publication as black and white illustrations as shown in Doctor Dunn's article. The original slides will be returned uninjured.
1836 *State Street.*

Glossary for Gas-Oxygen Anesthetist

LOUIS R. RUFFINE, D.D.S., Richmond Hill, New York

(From The Dental Outlook, 28:400 (September) 1941.)

Acapnaea—A condition of lowered carbon dioxide in the blood due to hyperventilation in the lungs.

Acarbia—Subnormal bicarbonate, acidosis induced by means of altitude, by means of acapnia, asphyxia, and by administration of acids.

Analgesia—Loss of pain without loss of consciousness.

Total Analgesia is the point of pain abolition.

Relative Analgesia is the point approaching total analgesia.

Anesthesia—Loss of sensation to the body, a state of insensibility to pain.

Basal Anesthesia — The hypnotic drug is referred to as the basal anesthetic; this drug also reduces the tissue demand for oxygen.

Synergistic Anesthesia—An additional gas to deepen narcosis is referred to as the synergist.

False Anesthesia—Hysteria may assume the appearance of the quiet surgical stage.

Anoci Association—The state of being

(Continued on page 522)

Palatal Bar Fixation of Mobile Teeth*

LEWIS WAYNE LAW, D.D.S., Grand Forks, North Dakota

DIGEST

A treatment is suggested whereby teeth may be saved which have become mobile as a result of periodontoclasia in which the local etiologic factor was pressure pericementitis and tooth loss. Such loose teeth may be restored to health by means of palatal bar fixation which prevents continued destruction of the bone surrounding the teeth. A removable palatal bar immobilizes the teeth in the bucco-lingual plane with the expectation that firm bone will be rebuilt around the loose teeth. How this is done is described in procedure, and the reader may follow the suggestions by applying the principles set forth in diagnosing and prescribing treatment.

Pressure Cementitis

THE LOSS OF TEETH and the traumatic occlusion resulting represent the local etiology in periodontoclasia. The lack of balance between the masticating force and its direction against the resistance of the supporting tissues results in inflammation of the pericemental membrane, often called pressure pericementitis. There may be an associated infection, or infection may occur subsequent to injury. One of the important considerations is that pressure pericementitis results from a particular type of trauma, and not from infection.

The supporting bone of the teeth, when in normal health, possesses ample residual strength beyond that required in mastication when the biting force is applied in the direction of the long axis of the tooth. If the force is applied at a considerable angle to the long axis, causing the tooth to be slightly tipped in its socket beyond its functional limit, pressure pericementitis occurs in which, through activity of the osteoclasts (bone destroying cells) the alveolar process is absorbed and the teeth become loose.

When pressure is applied to a molar tooth in such a manner as to move the crown buccally, the tendency is for resorption of the bone of the alveolar process to occur on the buccal side with straightening of the periodontal membrane fibers on the lingual side; and the center of rotation, the fulcrum, in this case, is generally located somewhere lingual to the buccal roots.

Masticatory Force and Its Resultant Force on Alveolar Bone

Whenever a force tends to produce rotation there is a torque. A force applied at a considerable distance from an axis has a greater effectiveness than the same force applied near the axis. To measure this torque, or moment of force, the product of the force and the perpendicular distance from the force is used. The law of the lever states that when two torques acting on a body are equal and opposite in direction, they are in equilibrium and there is no tendency to produce rotation. Mathematically, this law may be represented in the equation $F_1 \times L_1 = F_2 \times L_2$ where F_1L_1 represents the force and lever arm length respectively of one lever, and F_2L_2 represents the force and lever arm length of a second lever.

The larger the number of teeth to which force is applied, the smaller will be the portion distributed to each, and the reverse is also true.

Mathematical Calculation of Resultant Forces

Let us consider a common finding where an upper molar has tipped buccally owing to tooth loss and traumatic occlusion (Fig. 1). In this type of movement the fulcrum is somewhere near the buccal roots. Let us use the average masticatory force of 120 pounds and represent it as $Force_1$. The length, L_1, represents the lever arm or perpendicular distance from the fulcrum to the axis of the masticating force, and for computation, we may designate it as 1 unit length. By the law of the lever, we may calculate the resultant force acting on the buccal alveolar process. With a diagram drawn to scale, we may estimate the length of the lever arm, L_2, acting on the alveolar process. L_2 is approximately three times the length of L_1 (which we have designated as 1 unit length) and is therefore equal to 3 units' length.

Likewise, we may calculate approximately the amount of force required from the lingual direction to enact equilibrium. In treating teeth by palatal bar fixation the lingual of the crown surface offers a place of appliance attachment. Let L_3 represent the lever arm from the fulcrum to this point on the lingual crown surface. This length in the diagram is approximately five times that of L_1; consequently, L_3 is 5 units long—from the lever law equation:

$$F_1L_1 = F_2L_2 = F_3L_3$$

$$F_1 = 120 \text{ lbs. } (\textit{masticating force})$$

$$F_2 = \frac{F_1L_1}{L_2} = \frac{120 \times 1}{3} = 40 \text{ lbs.}$$

$$F_3 = \frac{F_2L_2}{L_3} = \frac{40 \times 3}{5} = 24 \text{ lbs.}$$

From this we conclude that in such a case as represented in Fig. 1 where the masticatory force is 120 pounds, the resultant force acting on the alveolar crest is 40 pounds. We can readily see that as the alveolar process is continually absorbed, the lever arm (L_2) becomes progressively shorter, and the force acting on the alveolar crest becomes progressively increased.

*Read before the Mid-Winter Clinic of the Minneapolis District Dental Society and the Annual Convention of the Minnesota State Dental Society, 1940.

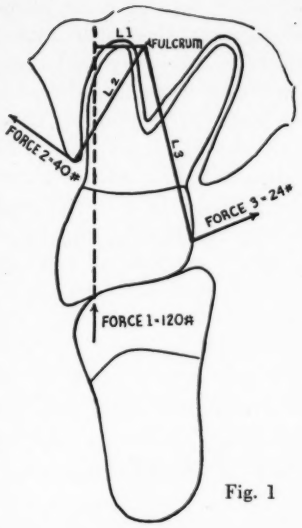


Fig. 1

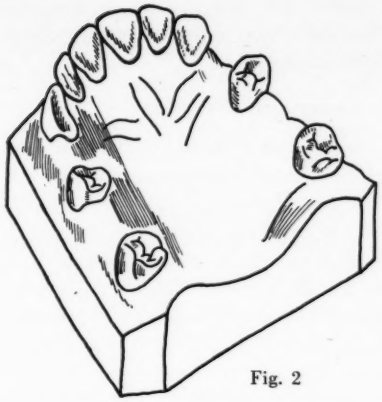


Fig. 2

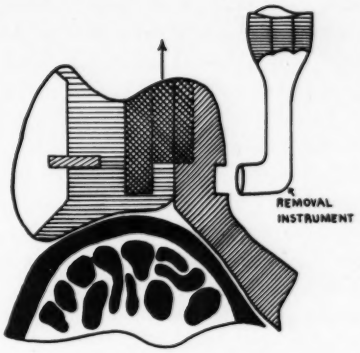


Fig. 3

Fig. 1—Cross section of molar teeth, illustrated for the study of resultant forces of mastication when an upper molar has tipped buccally owing to tooth loss and traumatic occlusion.
Fig. 2—Drawing of case to be restored, showing drifted teeth in the mesio-distal plane. A fixed bridge is constructed in the orthodox manner to produce stabilization. The palatal bar will be attached to lingual of bridge.
Fig. 3—Step 1: A large size Chayes attachment (indicated by cross-hatch) has been used, which serves to lock the palatal bar to the pontic teeth. Many such types of attachments may be secured from dental supply houses. A cross section of the pontic, attachment, and palatal bar illustrates how the attachment will fit into the pontic.

Step 2: Lubricate and heat the platinum attachment and place it into the wax pontic, so that it may be removed in a vertical axis. A clasp-surveyor may be used to align the attachment parallel to the axis in which the bar will be withdrawn.

Step 3: Remove the attachments and cast the pontics. In casting the pontics, exact expansion of the investment mold is necessary to compensate for the gold shrinkage.

Step 4: Fit the attachments to the cast pontics and test their removal.
Fig. 4—Step 5: Solder bridges. Drawing shows completed bridgework with palatal bar removed.
Fig. 5—Step 6: With the attachments inserted into the pontics, the palatal bar is waxed. In cross section the bar is waxed triangularly for strength.

Step 7: Cast bar in gold or stainless metal alloy. Heat treatment and slow cooling of the gold alloy palatal bar will increase its hardness. Stainless metal alloy is light, approximately half the weight and twice the strength of gold. Dentists, not possessing the equipment necessary to cast stainless alloy, must have this casting finished in a commercial dental laboratory.
Fig. 6—Step 8: The finished bar is welded to the attachments. It is placed in position, and it and the pontic are finished. Note the manner in which the bar is attached to the pontic tooth.

Step 9: With cylindrical dental bur, a small facet is cut on the lingual of each side of the bar (Figs. 3 and 6). By reshaping a right angled dental instrument to fit into these facets, a means is provided for the removal of the bar. The patient can be given a removal instrument and instructed in the manner of removing the bar for cleansing.

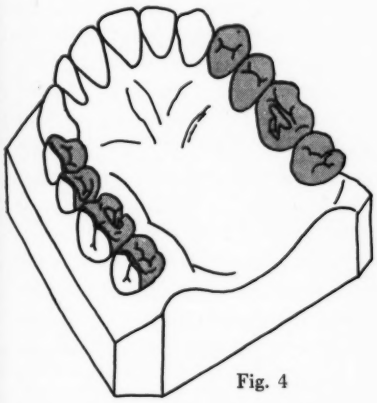


Fig. 4

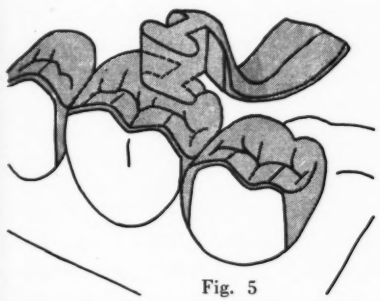


Fig. 5

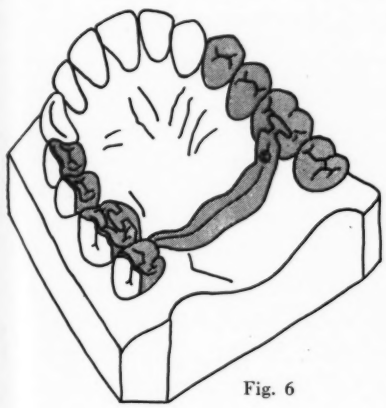


Fig. 6

Analysis of a Typical Case

Examination frequently reveals patients with absent posterior teeth with resultant drifting, loosening, and elongating of the remaining teeth. Consider the example shown in Fig. 2 in which the molars and bicuspids show mobility, both mesio-distally and bucco-lingually. The upper teeth in the mesio-distal axis can be stabilized with fixed bridgework. Often, in treatment, this alone is not sufficient, especially when there has been considerable shifting buccally. If an upper four-tooth or five-tooth posterior unilateral bridge is examined with the finger placed along the buccal surfaces of the teeth, the operator will notice whether there is any buccal movement of the bridge as the patient bites in heavy lateral occlusion. One can readily understand how a sufficiently strong palatal bar anchored to both posterior segments of the dental arch will to some extent prevent the destructive forces that destroy the weak buccal alveolar process. A removable bar is advantageous over a fixed palatal bar for two reasons: first, it may be removed by either the dentist or patient for cleansing, and second, when, during the period of subsequent treatment, normal bone regeneration has occurred to the satisfaction of the dentist, the bar may be removed. Should a recurrence manifest itself after a period of observation during which the bar has been removed, the bar may be reinserted as a permanent necessity.

Construction of Removable Palatal Bar

Consider the restoration of the case shown in Fig. 2. Fixed bridgework with cast gold partial veneer crown abutments and cast gold porcelain pontics will stabilize the drifted teeth in the

mesio-distal plane. Care must be taken in restoring the inclined planes of the cusps with balanced occlusion. When the buccal cusps are restored too sharply, lateral occlusion causes a buccal alveolar bone destruction.

The bar must be attached to the lingual of the bridge restoration, and the cast gold pontics offer a good foundation for this anchorage. The fixed bridges are constructed in the orthodox manner up to the step when the pontics are in the wax. Actual construction of the bar then begins. The step-by-step procedure is given in the accompanying illustrations.

Comment

In the case of dental arches with absent teeth and loose remaining teeth, it may not be sufficient to relieve the excessive stress by attempting to restore the normal occlusion with fixed bridgework, for mesio-distal stabilization alone is not sufficient; the posterior teeth must be stabilized in the bucco-lingual plane, for this is the plane of lateral occlusion. The length of time required for resorbed bone to be rebuilt is proportional to the age of the adult, and the success of the effort will depend, to a considerable extent, on the time elapsed since the bone was resorbed. By fixation, teeth can be restored to health which otherwise would be lost through continued disease. Success is achieved when normal physiologic function is restored.

315 *North Princeton Street.*

Chicago Dental Society Announces Essay Award

Cash prizes totaling $500.00 for the two best essays on dental subjects are offered by the Chicago Dental Society, the winners to present their essays at the opening general session of the 1942 Midwinter Meeting. The first award offered is $300.00 and the second, $200.00. The Meeting will be held at the Palmer House February 23, 24, 25 and 26. The purpose of this competition, according to Doctor Glenn E. Cartwright, President of the Society, is to encourage scientific research and investigation in dentistry in the hope and expectation that new knowledge in the dental field may be developed and disseminated.

Rules

Eligibility to Apply for Participation —Any American Dental Association member or other person of scientific attainment affiliated with a recognized institution in the dental field shall be eligible to apply for permission to enter the competition. The Chicago Dental Society through its duly appointed Committee shall pass upon the qualifications of applicants. Application forms may be secured upon written request to the Chicago Dental Society, 30 North Michigan Avenue, Chicago.

Character of Essays—Each essay submitted must represent an original investigation and contain some new significant material of value to dentistry. Proposed subject matter must first be submitted in synopsis form at the time of application and approved by the Chicago Dental Society.

Prizes—Two prizes are to be offered: a first prize of $300.00 and a second prize of $200.00. The award committee, however, shall reserve the right to omit awards, if in its judgment none of the entries is worthy.

Presentation of Winning Essays—The authors of the two winning essays will be invited to present them at the opening general session of the Midwinter Meeting, it being understood that, irrespective of the number of co-authors or collaborators, only one shall be invited. The expenses of the winner will be paid by the Chicago Dental Society on the same basis as regularly invited Midwinter Meeting essayists; that is, round trip railroad fare and pullman accommodations to Chicago in addition to a small allowance sufficient to cover out-of-pocket expense, such as hotel accommodations, meals, and incidentals.

Ownership and Publication — The two winning essays are to become the property of the Chicago Dental Society and will be published in the most advantageous manner. All other essays will be returned to their respective authors.

Mechanical Specifications — All essays must be typewritten on one side only of good quality 8½ by 11 white paper, double-spaced, with 1 inch margins. Although no hard and fast rule is established, it is suggested that essays be from fifteen to twenty-five pages in length exclusive of bibliography, illustrations, tables and charts.

Final Date for Acceptance of Entries and Future Policy—No essays will be considered for this competition unless submitted to the Society on or before December 31, 1941.

It is proposed that this award will be an annual affair hereafter; therefore, beginning with the 1943 competition, essays must be submitted not later than November 1 preceding. Should the Chicago Dental Society at any time decide to discontinue the award, announcement to this effect will be made in the dental press not later than May 15 of the year preceding.

* * *

All inquiries pertaining to the competition should be addressed to the Society at its offices, 30 North Michigan Avenue, Chicago.

The Editor's Page

VILRAY P. BLAIR, the masterful oral surgeon, and his associates have recently published a book on CANCER OF THE FACE AND MOUTH[1] which should be of interest to every practicing dentist. Although the dentist is not called on to treat cancer, he has a singular opportunity in often being the first to observe precancerous and early cancerous lesions. Cancer of the face and mouth may be readily observed and should not, therefore, take such a horrible toll in life. It seems that almost every death resulting from cancer of the face and mouth is needless. Blair in exploring the reasons for this cost in life suggests three: (1) Only from 5 per cent to 10 per cent of the people that he sees can be considered as presenting early for examination. He considers that this doleful condition is the result of "late diagnosis, inadequate treatment, or a combination of both." (2) Many sufferers of cancer of the face and mouth have fallen into the evil hands of quacks with their salves and pastes. Although some of these caustic preparations may destroy the lesion locally the condition usually breaks out at another site, usually at the lymph glands that drain the area. (3) Blair believes that a misinterpretation of microscopic observations is frequently a cause of loss of life in malignancies involving the face and mouth. A biopsy specimen should certainly "include the substance of the growth itself." The statement on the pathologist's report, "No cancer was found," should not be interpreted as meaning, "No cancer is present."

Many of the cancers in the oral area are viciously malignant. Blair points out that metastatic extensions from mouth cancers are usually limited to the cervical lymph glands and "the majority of people dying of cancer of the mouth and face will ultimately succumb without the growth having extended below the clavicle." The mandible may be the site of the metastatic involvement from a distant site as well as the location from a primary lesion. Blair mentions four cases of pathologic fractures of the jaw resulting from metastatic carcinoma; "two from a locally cured adenoma of the rectum, one from the breast, and one from an unrecognized carcinoma of the thyroid gland." Dentists should certainly be alert to observe growths in the structures of the mandible which may represent metastatic malignancy that originated in other parts.

The virulence and the size of a cancer are not synonymous. High intrinsic virulence does not mean wide extensive involvement of the parts nor does a massive growth necessarily mean the most malignant one.

In this excellent book by Blair and his associates, Sherwood Moore and Louis T. Byars, there are careful follow-up statistics from the case records of the late Ellis Fischel concerning carcinoma of the tissues of particular interest to dentists. The accompanying table gives some of this information.

Carcinoma of Buccal Mucosa, Alveolar Process, Palate, and Velum: Five Year Results

Microscopically Proved Cases	Microscopically Proved and Clinically Diagnosed Cases	Patients Seen 1913-1935	Treatment Methods — Number
Total: 55	Total: 76	Total: 116	1. Local Excision: 26
Classified Clinically	*Survival*: 30	Treated and Followed: 76	a) local excision alone
Early: 23	Clinically Early: 29	Treated not Followed: 14	b) radium supplemented SURVIVAL(a) and(b): 9
Survival: 17	*Survival*: 21	Untreated: 26	c) Supplemented by Unilateral Neck Dissections: 15
Classified Clinically	Clinically Advanced: 47	Operable: 18	SURVIVAL: 8
Advanced: 32	*Survival*: 9	Inoperable: 8	2. Resections of Mandible: 14
Survival: 6		*Total*	SURVIVAL: 4
Pathologically Classifiable: 29		*Survival*: 30	Bloodgood Operation: 9
Survival: 9			SURVIVAL: 1
Classed *Early*: 7			3. Radium: 19
Survival: 1			SURVIVAL: 6
Classed *Advanced*: 22			4. Radium and Neck Dissection: 8
Survival: 8			SURVIVAL: 2
			5. Neck Dissection: 4
			SURVIVAL: 2
			SUMMARY OF TREATMENT
			Treated: 90
			Survival: 30

Blair, from his vast clinical experience and his deep knowledge of pathology and with his skillful hands has made a great contribution to surgery. Almost half the book is made up of excellent drawings showing the operative techniques used by oral and plastic surgeons in treating cancers of the face and jaws. The technical sketches are introduced with this simple, refreshing, modest statement: "We have never laid claim to priority for any operative procedures nor do we assume any responsibility in assigning credit elsewhere."

[1]Blair, V. P.; Moore, Sherwood; and Byars, L. T.: Cancer of the Face and Mouth, St. Louis, The C. V. Mosby Company, 1941.

Magnetic Counter-Influence in Full Lower Denture Retention

HYMAN FREEDMAN, D.D.S., New York City

DIGEST

Under the 20 pounds of pressure of centric occlusion the lower denture is firm on the ridge. In nearly all other jaw positions the stability of the denture is uncertain. Correct adaptation and tooth arrangement are the result of efforts heretofore made in denture construction. To this approach in construction may now be added a force that resists closure, so that the lower denture is better applied to its ridge as the rising mandible overcomes this resistance.

Magnets of like polarity in the opposed dentures repel each other, producing this resistance. This resistance comes to the aid of the lower denture in tilting; sudden changes from a state of seal to a state of suspension; discrepancies between denture and tissues, and in complete absence of a ridge. This resistance is a specific in counteracting drooping and rising heels of partial dentures. When the magnets are used instead of clasps in certain instances, the natural teeth are conserved.

Suction and pressure alike produce resorption. To compare the relative intensities of suction and this pressure, an attempt to pick up a peripherally sealed lower denture almost raises the patient with it; an attempt to raise a denture under maximum repulsion is only moderately resisted and as it is released, it resiliently slaps back into place.

THE FAMOUS expression that "form follows function" was invented by Dankmar Adler, according to Frank Lloyd Wright. The survival of Wright's "imperial architecture" through the Tokyo earthquake bore out the truth of that principle. The functional problems in the construction of full lower dentures place a still greater importance on stability in dentistry than in architecture, for in the mouth the disturbance is unremitting.

Form Versus Function

The prosthetic art attempts to relegate form to a secondary position. This is exemplified in such concessions as cusp flattening (to accommodate an easily disturbed denture); setting lower posteriors inwardly (to discourage tipping); avoiding occlusion on anteriors (so that prehension may not create apprehension posteriorly), and making dentures with broad base and wide heels turning up against hard tissues when space is limited. The exacting demands of function make it necessary for dentists to sacrifice form, and the all-important function of stability is frequently achieved at the expense of lesser functions. The evaluation appears just, because whereas form tries to make the patient seem what he no longer is, function helps him to survive.

To those who believe that all existing methods of full lower denture retention leave something to be desired, a further means is herein offered: By the use of magnets built within the upper and lower dentures, so that like poles oppose each other, the upper denture pushes the lower from it. This repellence diminishes as the jaws move apart and increases as they come together; as the lower denture is forced up in occlusion, by overcoming the repulsion, it becomes better applied to the ridge.

Repulsion Characterized

When there is no appreciable ridge to guide the position of the denture the tongue, cheeks and lips, often hindrances to stability, here serve as walls or purveyors, along which this magnetic influence leads the denture to the bottom of the trough. This retaining factor is (1) relatively constant (unaffected by regressive changes as peripheral seal might be); (2) active (a positive force differing from passive or accommodating aids, such as anatomic articulation); (3) a new and independent value which is added to any hitherto obtainable results (not a revision of an old form), and (4) applied to a different surface of the denture (differing from the usual approach from below).

Cause of Repellent Air Gap

A brief examination of the cause of this repellent air gap may help form a clearer idea of what goes on between the occluding surfaces of the opposed dentures. Alloys for magnets are inert until charged by an electric magnetizer. This

Fig. 1—Convexity of yoke of magnet is accommodated by concavity of ridge at bicuspid-molar region. Prominent ridges are expressly shown, for they leave little room for magnets.

charge induces the power stores in the alloy. Its ability to retain this induced power for long periods without electrical sustenance qualifies the alloy to be called a permanent magnet. The curved form is more efficient than the bar (of the same weight), for the curve or yoke stores power better and yields a more concentrated impulse at the pole ends. The lines of force both within and outside the magnet like to travel in curves.

Each alloy requires a special shape for its maximum efficiency. The best known alloy calls for a short, stumpy form. This is a fortunate coincidence, for with little modification, it can accommodate the limited vertical dimension of the mouth (Fig. 1). The convexity of the yoke fits into the concavity of the ridge at the bicuspid-molar region whereas the pole ends do not extend beyond the biting surfaces of the bicuspids and molars.

The poles of the magnet assume the polarity of the magnetizer; in other words, the negative and positive of the galvanic current of the magnetizer become the north and south poles of the magnet. But although the electric power of the magnetizer can ring a bell or light a light, the power that it induces in the magnet can only be made to pull or push. As in galvanic current the negative charge seeks the positive to complete its circuit (in a wasteful flash); but man interposes electric devices to exploit the gap; thus in the magnet the lines of force striving from the north to the south can be harnessed for use (Fig. 2).

Simple Attraction

As the lines of force seek to pass from the north pole to the south to complete their natural circuit, they meet with resistance from the air in the gap between the poles. Seeking the easiest and shortest route the lines of force would welcome a bar of conducting metal that would bridge this gap and eliminate the air as a resistance factor. If a bar of iron or steel, therefore, is held near enough to these poles the lines of force, in their eagerness to use the bar to bridge the resisting air gap, draw that bar to them. The bar in this attracted position serves as a keeper, helping the lines of force to complete their circuit easily. Whereas in a galvanic current such bridging of poles produces a wasteful flash, the behavior is different in the magnet where the lines of force are conserved by the keeper (Fig. 3).

Compound Attraction

If instead of a magnet with its keeper, two magnets without keepers were disposed as in Fig. 4, so that unlike poles oppose each other at a short distance, the lines of force, which would ordinarily flow from north to south of the same magnet, find it shorter and easier to flow from the north of one magnet to the south of the opposing magnet. But here the attraction is greatly intensified over the case of the magnet with inert keeper, for the two magnets act mutually upon each other to obtain the path of least resistance, exerting lines of force from two directions to attract each other into a closed circuit. Magnets so locked are nested and energy-conserving.

Repulsion

When two magnets are so disposed at a short distance from each other that like poles oppose one another as in Fig. 5, although the usual air resistance is present between the north and south poles of each individual magnet, the lines of force striving from north to south of the same magnet are even more eager to flow through that air gap (Fig. 2) between the poles of that magnet in preference to flowing toward a similar pole in the opposing magnet, for such lines of force do not combine. The magnet seeks to select and traverse the air resistance between its own poles rather than being forced to combine with lines of force against its nature. In doing this the magnet forms a barrier which tends to keep away or push away the unnatural pole of the opposing magnet. The convex course of flow of force of the other, forms the cushion of resistance.

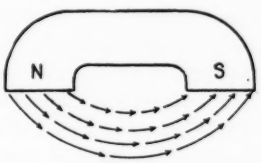


Fig. 2

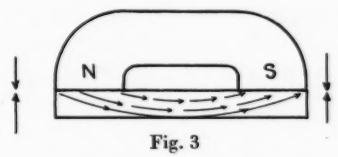


Fig. 3

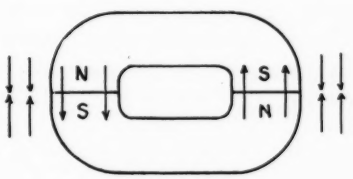


Fig. 4

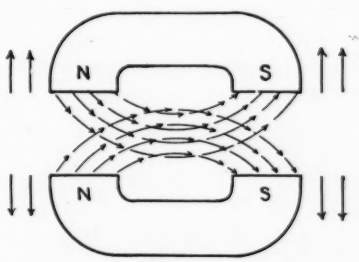


Fig. 5

Fig. 2—Direction of lines of force from the north to south pole of a magnet striving to complete circuit despite resistance of air gap between its poles.

Fig. 3—Passage of lines of force greatly facilitated by metallic "keeper" which conducts them, jumping the air gap resistance. Simple attraction.

Fig. 4—If the distance between the north pole of one magnet and south pole of the other magnet is less than that between the pole ends of the same magnet the lines of force prefer to go to the other magnet; in this way they meet less air resistance. The result is an intense attraction of the two magnets: they act concertedly on each other.

Fig. 5—Cushion of repulsion caused by like poles opposing each other. This is intensified as the mandible compels the lower magnets to occlude with upper. Here again (as in Fig. 2) lines of force are eager to traverse the air gaps of their own magnet to avoid the unnatural interference (like polar proximity) with the completion of circuit.

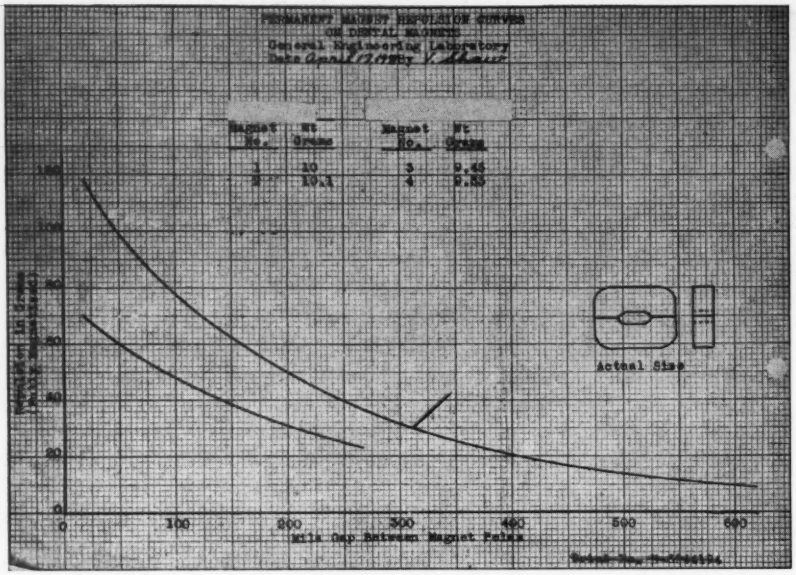


Fig. 6—Permanent magnet repulsion curves. Bisecting line of upper curve is midpoint of full gap. Although at that point the repulsion would be expected to drop to one-half, it diminishes to one-fourth, as indicated.

Inverse Square Law

The closer these opposing poles are compelled by outside force to approach each other the more in number and intensity do their own respective lines of force try to prevent it. The result is a repulsion that obeys an inverse square law. The accompanying chart shows permanent magnet repulsion curves. This is for a comparison of power of two different types of magnet alloy. The alloys are fully magnetized and held in a repelling position at different gaps (measured in mils on the horizontal dark line, 5 mils to a square; the repulsion is recorded in grams on the vertical dark line, 2 grams to a square). By following only the upper curve, one can see the behavior of one set of magnets held at varying distances in a repulsion setup. At a 20 mil gap the magnets pushed each other 118 grams worth. At a 310 mil gap there would be a one-half increase of the total increase represented on the chart. The bisecting line is at the midpoint of the range of the opening. At that midpoint we would expect the repulsion in grams to fall to one half of the 118 grams or about 59. But the chart shows the repulsion at that point to be only 30 grams. Instead of a falling off to a proportional half which would seem orderly, it has fallen off to one-fourth, which is one-half times one-half. Thus the repulsion diminishes by the square of the distance. This gives one-fourth the original repulsion at one-half the distance. Inverse means: the greater the distance, the less the power; thus the opening between the repelling magnets in the mouth causes a rapid falling off of repulsion.

Influence on Denture

The resistance that these opposing convex cushions of force produce takes a resilient, springy form. Following the thrust, the instant the lower denture is released from occlusion the repellence has already seated it for the next thrust. Instead of a complete release of the denture from the 20 pound thrust there is a transitional diminution of tension between the cavo-surface of the denture and its ridge. It diminishes to about 5 ounces at the beginning of opening, then to 1 or 2 ounces at rest. The patient is unaware of any sensation beyond the denture feeling more of an integral part of the ridge.

Dimension Leverage

To the average denture wearer the centric moment of impact without unilateral food disturbance is probably a most confident one; however, with food on the right side, preventing occlusion on the left, that moment becomes disturbing. Despite the inwardly tipped posteriors to shorten the horizontal short lever arm of impact, the occlusal surface of the denture being vertically distant from the crest of the ridge which is the fulcrum, tipping still goes on on the free side. Movable slippery tissue is unpredictable. Cross leverages obtain even where clasps are used to restrain them. In the tipping full lower denture any influence on the free left side which would tend to keep the lower from the upper denture should be welcome. Here a little repulsion can go a long way, for this is the end of the free long lever arm extending to the crest of the right side of the ridge.

If the mere presence of food unilaterally may disturb the denture, the denture wearer does not care to go into lateral excursions until the food is so as to permit a full occlusion on both sides. But when there can be a gliding on all teeth (without distress) the food is ready for deglutition rather than milling. It is toward producing an earlier, useful milling that the prosthetic science is directed.

Seal Uncertainty

With average skill a peripheral seal of the full lower denture can generally be obtained. In certain test positions the patient can almost be lifted by a lower denture made in this way; different conditions obtain, however, in mastication; the numerous cross leverages on wet yielding tissue, the unconscious dropping of the tongue to low level, or a shift of the lip free the denture without notice. The psychologic effect is poor. This sudden change from a seal to complete suspension in mid-air induces a closure which is an act of refuge. Perhaps it is this remissness that often causes a patient idly to pound the lower down in the hope of storing up a stability for mealtime.

Suction

As the lower ridge attempts to go into lateral, the lower denture would like to follow, but is held back by the friction from the upper. If there is ample cross section to the lower ridge the denture succeeds in following the ridge (lagging a bit because of soft tissue intervening between the bone of the ridge and the cavo-surface of the denture). The less eminent the ridge, the more soft tissue retention it needs to drag the denture with it. Suction, harmful though it is if

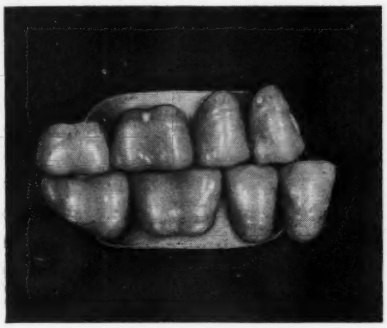


Fig. 7—Buccal aspect of a bicuspid-molar group articulated and expressly removed from set-up. Wax was removed to give a skeletal view of relation between teeth and magnets.

present at the moment, helps to resist the lateral assault. If it succeeds it does so only by virtue of a tug on the tissues forming the peripheral seal. If the seal remains intact the suctional pull is successful. This is the mechanism of suction. Simple adhesion (in the absence of an ample ridge) under lateral pressure cannot successfully carry the lower denture across, nor even retrieve it from the bolus on opening.

Repulsion at this time improves the retention and relieves the suction (by pressure). It reclaims the denture. Inasmuch as repulsion does not permit the denture to leave its position for any great distance, the denture has less distance to traverse in returning to correct position. The chance of false seating is greatly diminished. This pressure is not nearly so intense as suction. We never question suction in the upper; we take it for granted. We wink at suction in a lower, considering it fortunate; yet we will grow skeptical of this intermittent pressure which restrains false seatings.

With well fitting cavo-surfaces; with borders conforming to flexion lines; with labial and buccal thicknesses to hold against corresponding vestibular surfaces—all hitherto available surfaces have been exploited in an effort to stabilize. It would therefore seem that repulsion applied to the one remaining surface (occlusal) would complete the cycle of retention.

Uncertainties

The perfect lower model cannot be predicted, because the finished lower denture often fails to produce areas of irritation before a week's wear. In other words, how can we register at the time of taking an impression a condition that is not to occur until the denture has been worn a week? The necessity for trimming is inevitable. The transfer of the irritated areas of soft tissue for relief in the denture cannot be accurate, for the disclosing paste spreads, and relief must be instituted while the surrounding tissues are still puffy from the hurt. There are misgivings as to just when the peripheral seal is being cut away, and if the denture has partly survived that, then comes the settling which calls for further "cut and try" reduction. Adequate peripheral seal is impossible in instances with rami more obtuse than ninety degrees, flabby mylohyoid muscles with a great range of movement of the floor of the mouth, tough dry tissues, loose membranes, and short frenum linguae.

Tolerance

These are some of the barriers that prevent utility from keeping pace with advances in esthetics. Another and important factor to be considered is the patient's degree of tolerance. It is as varied in different persons as the degree of receptivity of pain (through unrelated). An immediate denture is worn and treasured by one person for years after it has outlived its usefulness; in another with similar mouth conditions, final dentures made in the most approved manner are rejected with a cold decision to forego them altogether. Such is the range of the threshold of tolerance. The ultimate prosthetic strivings, a science that can be learned, clash with human reactions, an art which must be felt. With the progress of the science there should be a falling off of the oblique cases.

In a serious effort to raise the functional standard of the full lower denture I am suggesting the use of an influence which is an entity apart from all prior accepted efforts. It is believed that the ultimate in design duplicated to embody this magnetic influence raises the standard of the denture. The better the denture, the more the repellence augments that standard; conversely where the influence is expected to compensate for faulty technique, the failure is more pronounced. The magnetic counter-influence cannot serve as a substitute for care in technique.

Technique

1. With the try-in approved and returned to the articulator, the bicuspids and molars are cut to permit laying in of the magnets.

Although porcelain teeth may be used all around in the set-up, acrylic bicuspids and molars are better adapted to cutting without a corresponding fragility. At some time in the future if these acrylic teeth will be so molded as to present the lingual recesses, the magnets could be applied to the set-up with little or no disturbance of the teeth. But at the present:

a) The bicuspids and molars are removed, one batch at a time. First the lower left ones are removed from the set-up.

b) The wax is cut to the baseplate.

c) It is well to have the model tinfoiled there so as not to mar it.

d) One magnet is tried for fit. Magnets are best handled inert, magnetizing them in the finished denture.

e) The covex part or yoke generally fits the notch in about the region of the first permanent molar (Fig. 1).

f) If the magnet's pole ends keep the articulator open, the pole ends are reduced by grinding them on special wheels.

g) The height can also be reduced by trimming the yoke portion if the convexity is less than the concavity of the model. Although this drops the magnet down, it is well to bear in mind that a sudden reduction of metal resulting in an irregular uneven thickness of cross section will reduce the eventual magnetic force. Abrupt nicks tend to choke it off and varying cross sections are wasteful because magnetism in this type

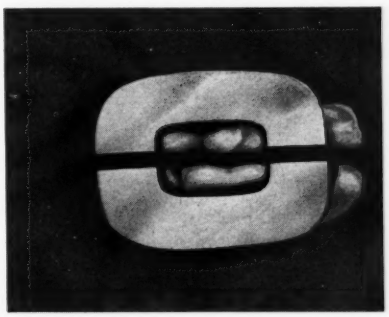


Fig. 8—Lingual aspect of same group showing the cut acrylic teeth with magnets laid in. The magnets are separated to give a clearer view. Note the coinciding poles.

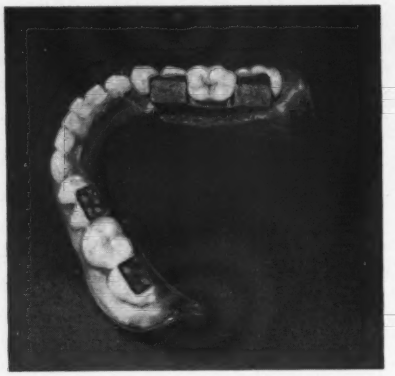


Fig. 9—Waxed case. On one side the teeth were deliberately separated from the magnet to show manner of apposition of teeth with magnets.

of alloy travels in a linear direction not passing through points that lie outside the minimum cross sectional curve.

In the near future the magnets will be made short enough to permit a rotation of the yoke in the notch of the model which will allow the posterior pole end to rise in conformity with the curve of Spee with little or no grinding. Also the body of the magnet will be curved somewhat bucco-lingually to conform to that curvature of the ridge.

2. With the lower left magnet neatly filling the height ascribed to the teeth, with its anterior pole about 2 mm. behind the lower cuspid, it is waxed into position.

3. The acrylic teeth are now cut to be laid against the magnet and rearticulated to conform.

4. The upper left side is done in the same way. The pole ends are made to coincide exactly with the lower ones.

5. These teeth are cut and laid against their magnet.

6. The right side is treated in the same way.

7. The case is tried in the mouth with the upper and lower pole ends coinciding in centric occlusion (Fig. 8).

8. In waxing the case it is well to expose the pole ends lingually. This provides a linguo-occlusal corner together with the free occlusal part of the pole. This corner provides the index in the plaster in flasking, so that the proper magnet is returned to its original position. In removing them with tweezers to wash away the wax, they should be kept in correct order further to assure their proper replacement. This is not for polarity, for they are inert; but although the magnets may look alike, each has been ground for its position.

9. The magnets are placed in the bicuspid molar region because the opening at that point is about one-half the opening at the incisors. That keeps the lower denture in a more effective sphere of influence.

If the north pole of the upper is distal to the north pole of the lower, that makes it nearer the south pole of the lower. This, if near enough, may result in attraction instead of repulsion. Although the pole ends of each magnet are sufficiently spaced to permit an ample protrusion without mishap, faulty placement of the magnets in addition to protrusion would be undesirable; hence this coinciding of the pole ends must be checked in the finished dentures.

10. In further adjustment the magnets as well as the teeth are ground, and the patient is dismissed without magnetizing the case. It is a good plan to acquaint the patient who is about to wear dentures with the most that can be expected of dentures as they are made today. After a week or two, and with sulci having been ground into the pole ends the case is magnetized without the knowledge of the patient. The improvement is instantly manifested. If the dentures were magnetized immediately the patient might quickly absorb the improvement. The difference between our best efforts and teeth in alveoli is still great enough for a patient quickly to discount an improvement and step up his expectations. Because of the patient's initial qualms and his reluctance to venture into the unknown, the knowledge that magnetism has been applied, especially in the mouth, is likely to multiply his fears. The patient may then be prone to blame magnetism for conditions that are due to over-extension of the denture, failure to relieve hard tissues properly, irritations resulting from settling and regressive changes or improperly balanced occlusion. Without the patient's awareness, however, when the dentures are suddenly demagnetized by exposing them to a field of alternating current, the patient, left with all these symptoms, will complain: "They have become loose into the bargain." On being informed that the magnets have no longer been working, the patient will understand their value.

Comments

The nature of this service appears to have attracted the most wretched cases. Persons who have had previous denture experience sense the change more readily. For the most part, once the difficulties not originating in the repulsion have been overcome, patients appear to be (by their own admission) left with a stability never before experienced.

Of all the expectations of the full lower denture the one best fulfilled is the movement of leaving the ridge. By deliberately magnetizing the dentures for attraction the lower flies up. If there is a seal, that, too, is quickly broken after a thrust. If this attraction shows the lower so hopelessly on the debit side, a repulsion of a like intensity would obviously appear as a direct antidote. If by repulsion the improvement does not show up as theatrically as does the devastation caused by attraction, or if it is not so useful in the same degree as attraction can be upsetting, the repulsion serves to indicate the sore need for any stabilizing approach from above.

In one type of partial denture in which magnets were ultimately used, only the six upper and lower anterior teeth were in situ. The upper denture drooped dwistally at the heels and the lower rose despite well made continuous clasps and cribs on both. Magnets were incorporated. The repellence so thoroughly kept the heels of the upper and lower applied to their respective ridges that the cribs and continuous part of the clasps were removed without causing any visible change. The repulsion applied directly to the saddles was far

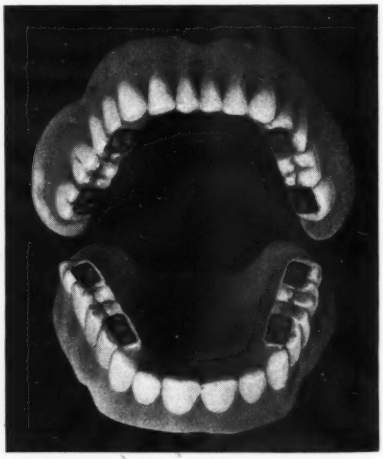


Fig. 10—A finished case.

more effective than the remote cross lever stabilization from the lingual surfaces of the anterior teeth.

In many instances this type of partial denture follows a course of orderly extraction of the clasped teeth. It would appear that they are inadequately ridge-borne and too well clasped. In a partial lower of this type, for example, the clasped tooth rises in exfoliation, taking the mesial part of the saddle with it as it embeds itself at the heel margin; thus there is an unequal distribution of ridge-bearing with undue strain on the tooth and too rapid absorption elsewhere.

Frequently the lateral demands of chewing can be met by the mere eminence of the ridge pressed into the cavo-surface of the denture but being held tight to the rigidly clasped tooth, so that the tailpiece of a saddle has to drag the clasped tooth with it at each thrust. And as the saddle sinks distally a corresponding elevation is produced anteriorly, the clasped tooth being the pivotal point. Perhaps that is why so many partial dentures reveal cavo-surfaces (before cleansing) with food deposits of a millimeter or more of thickness, undisturbed and unflattened by any contact with a ridge. And particularly those saddles clasped both mesially and distally appear to function only as connecting agents of clasps to teeth (despite an occasional imprint on the soft tissues here and there). There is a rigidity similar to that of a fixed bridge. This rigidity neither manifests the give of tissue compression nor could it accommodate such compression. But such a partial case does possess the known disadvantages of the removable device: strain of repeated placing and removal caries-producing factor, saddles that are food traps and speech impediments.

For a number of cases in which the patient's receptivity was high owing to the orderly disappearance of the clasped teeth, partial dentures were retained with no more than repellence to keep them in place; the few remaining teeth were ignored as if they did not exist. These dentures were less rigid than those with clasped teeth. (Although greater rigidity is desirable, it was well received.) The remaining teeth were unhampered beyond a light proximal contact with the contiguous artificial ones. These are almost all ridge-bearing and the understanding patient appears to be willing to accept a lesser rigidity in exchange for borrowed time for the remainder of his natural teeth. With these at least there is an even settling with no pivotal impediment. The soft tissues about the natural teeth are relieved in the construction of the denture and further relieved when necessary. The necessity for relief varies with the nature of the antagonizing thrust. If the opposing teeth are artificial, it is not great. If they include a natural tooth and also if the saddle is shorter, only occlusal rests are used. The rests are simple and heavy, to be relieved from within to accommodate a settling case. In those instances in which the patient's degree of tolerance seems uncertain, light clasps were used, with or without occlusal rests. When it was thought wise the buccal and lingual arms of the clasps were later cut away. In any case the diminished rate of loss of the few remaining teeth is so marked as to shake off the patient's attitude of futility at this stage.

The denture weight is not increased perceptibly, because although the specific gravity of the magnets is greater than that of the denture material, there is only a small amount of magnet alloy used and the alloy substitutes denture material. The alloy resembles stainless steel and essentially all the surface protruding from denture material is exposed to friction. But it is well not to soak the denture overnight. It is best left in a dry state. The magnetic power diminishes at the end of a year, at which time it is easily remagnetized. Persons who have been exposed to the powerful magnetic fields of commercial electromagnets for many years show no untoward signs.

The research division of The General Electric Company has developed an alloy specially treated to suit the needs of this application in dentistry. Inasmuch as magnets pitted against each other for repulsion demagnetize rapidly, this alloy was developed to deliver the most effective impulse over the longest period for its small size. These magnets will soon be available.

200 *West Fifty-Eighth Street.*

X-Ray Mountings

HENRY FISCHER, D.D.S., Bronx, New York

THE USUAL CARDBOARD X-ray mounts are expensive, bulky to handle, and hard to store. The method to be described makes it easy to mount any number of roentgenograms, fold them over compactly to be filed away in a small envelope. If a folder system of cards is used, the envelope can easily be pasted to the card, and the possibility of the roentgenograms being lost is entirely eliminated.

Scotch cellulose tape which is readily available is the only additional material needed. This tape is sticky enough to hold the roentgenograms together; yet if the need arises to remove the film, it can be accomplished by simply pulling it off without damaging or marking the roentgenogram.

1. In mounting four roentgenograms of the molar regions, they are placed in their anatomic positions, and a strip of tape is cut off a little longer than the length of the two roentgenograms.
2. This is cut in half lengthwise.
3. One strip is used to fasten the four roentgenograms together through the middle.
4. The excess at both ends is folded over.
5. The other strip is placed at right angles to the first strip to form a plus sign. This attaches the four roentgenograms to one another.

The same principle is applied for mounting a six, ten, or twelve film series.

The roentgenograms held together in this manner can easily be viewed on an illuminated ground glass viewer. After they are used, they can be folded and placed in a small envelope until needed again.

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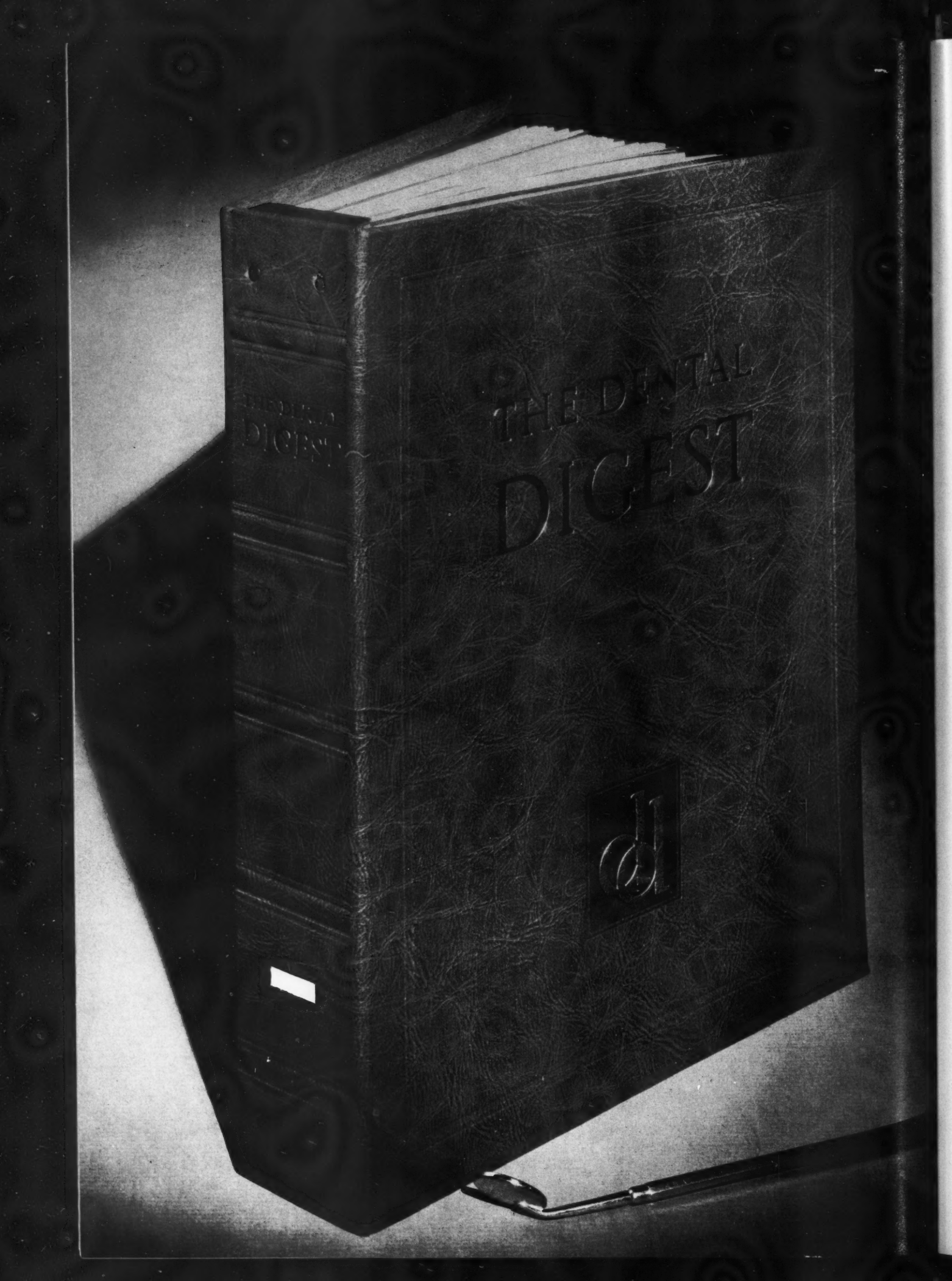
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That was YOU!... Remember?

THE KID was standing on a street corner, in the rain. The crummy curled-up felt hat —left in the mess hall by the oldtimer who swiped the kid's new issue headpiece—was too small, let the rain trickle down his neck. The OD blouse had a size 16 collar that sagged in front. The rough field shoes would have fitted two other fellows. He looked more like a scarecrow than a soldier, and felt funnier.

It was his second month in the Army, and his second camp. In the shift, his service record hadn't arrived in time for payday, and a lone two-bits stood between him and the next. Main Street was lined with movie houses, dance halls, eat joints and banana-split dispensaries—all strictly no good to a soldier shy of folding money ... He had come into town because he was fed up with the barracks; but even bunk fatigue was better than roaming around by yourself in the rain in a strange town... He wondered when the first truck would start back to camp...

THE kid soldier was YOU... remember? You've probably forgotten. Looking back, those were the best days of your life—but not all of them, if your memory tells the truth! Some of them were pretty sour, particularly at first. Later, you learned about the "Y" huts and service clubs where you could spend time when you hadn't anything else to spend. They tossed teas, and held dances, and you met some local girls and got invites to Sunday dinners, and felt like a human being once more!

Now we have another citizen army, mostly kids like we were. Sure, the Army dresses them better, and feeds them better than it did us. But these boys get homesick and lonesome, fed up with formation and drill and routine, just as we did. They have the same old problem with their spare time—and twenty-one bucks a month doesn't solve it... That's where the USO comes in.

THE USO—United Service Organizations for National Defense—are all the old welfare outfits working under one big tent today. (See the list below.) Outside of camps and in nearby towns, they set up recreation centers for service men, and defense workers; places where the boys can loaf and play when off duty. They help out with problems, give directions and advice, arrange entertainments; may even put the boys up for the night or on weekends when they are out on passes. And they do a good job, as they always have!

The USO figure they will have to take care of 2,000,000 customers in the next year—men in the armed services, men and girls away from home on defense jobs. And they need $10,765,000—a little over $5 per person served... It isn't much to ask for. And where can a 5-spot buy more than in the USO?... Send your contribution to United Service Organizations, National Headquarters, Empire State Building, New York, N. Y., or to your local USO Committee. Join the army behind the Army! Thanks...

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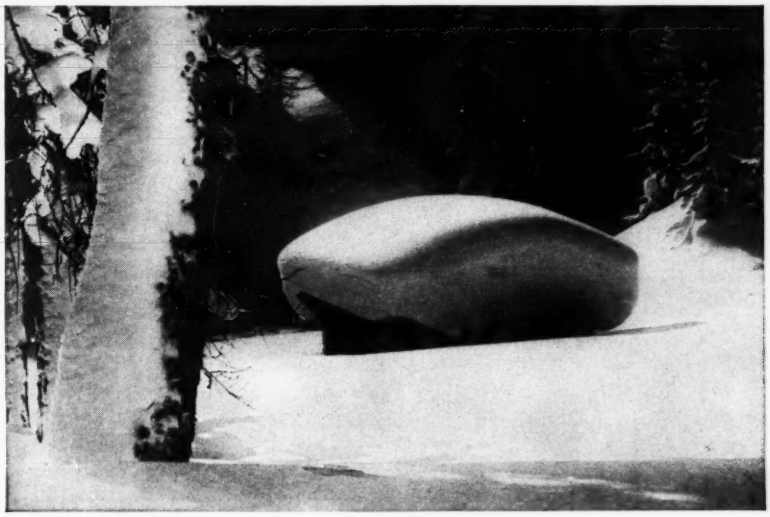

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STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS, OF AUGUST 24, 1912.

Of The Dental Digest, published monthly at Pittsburgh, Pa., for October 1, 1941.

State of Pennsylvania,
County of Allegheny,
ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared M. B. Massol, who, having been duly sworn according to law, deposes and says that he is the Publisher of The Dental Digest, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 411, Postal Laws and Regulations, printed on the reverse side of this form to wit:

1. That the names and addresses of the publisher and editor, are: Editor, E. J. Ryan, B.S., D.D.S., 708 Church Street, Evanston, Ill., Publisher, M. B. Massol, 1005 Liberty Ave., Pittsburgh, Pa.

2. That the owners are: Dental Digest, Inc., 1005 Liberty Ave., Pittsburgh, Pa.; Oral Hygiene, Inc., 1005 Liberty Ave., Pittsburgh, Pa.; M. B. Massol, 1005 Liberty Ave., Pittsburgh, Pa.; Louise A. Smith, Hotel Schenley, Pittsburgh, Pa.; Lynn A. Smith, 1005 Liberty Ave., Pittsburgh, Pa.

3. That the known bondholders, mortgages, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraph next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company is trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stocks, bonds, or other securities than as so stated by him.

(Signed) M. B. MASSOL,
Publisher.

Sworn to and subscribed before me this 26th day of September, 1941.

(Seal) E. G. Burgdorf, Notary Public.
(My commission expires May 16, 1944.)

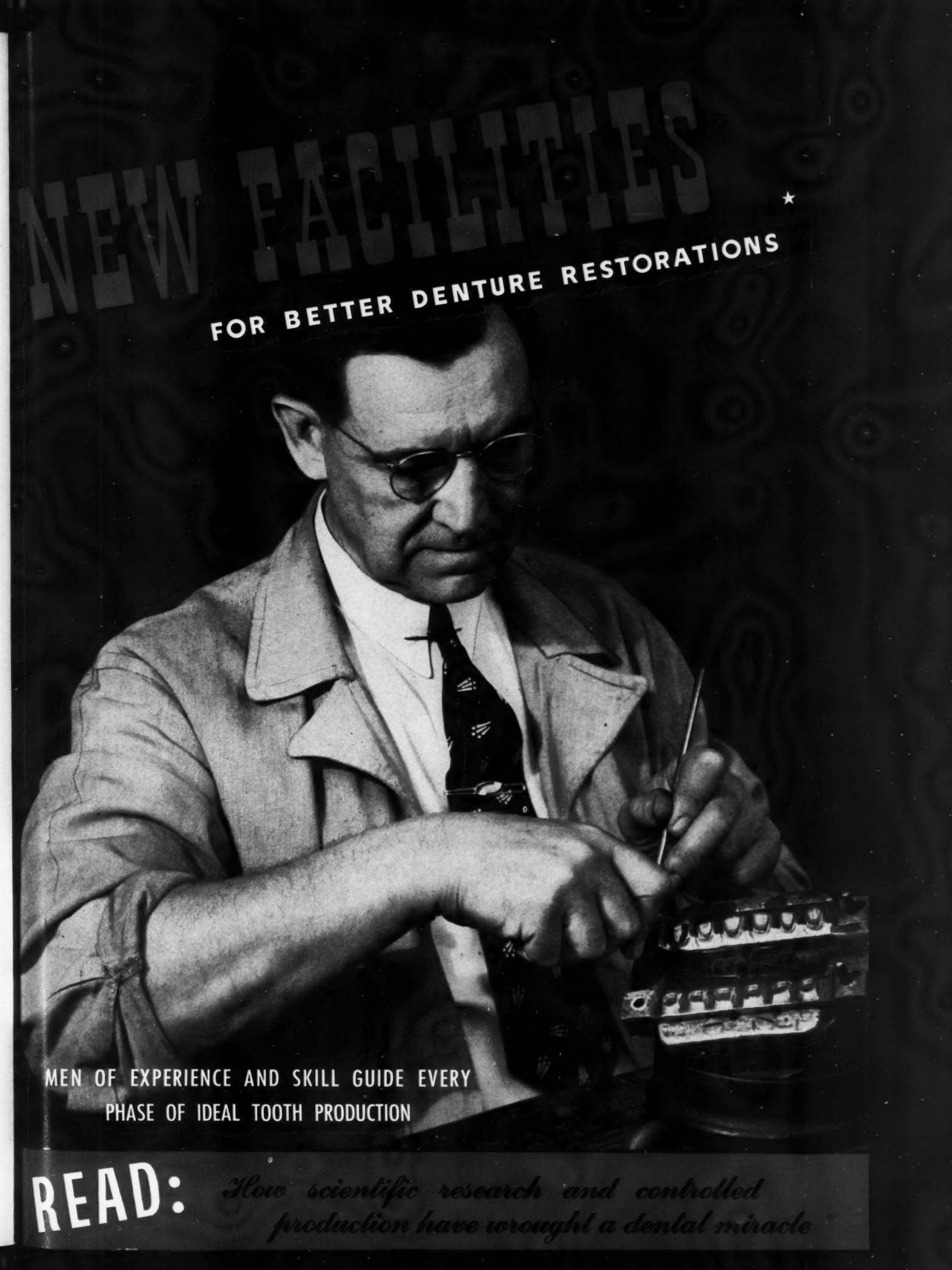
Contra-Angles

Nice Going, California . . . !

One of the members of the Board of Dental Examiners of the great state of California issued a neat advertising plug for a proprietary mouth wash. He used the bad taste to write his testimonial on the official stationery of the Department of Vocational Standards of the State of California. Promptly the manufacturers had the letter photostated to circulate among the dental profession. California which is so strict and stringent in its dental laws should not be happy to know that one of its Board of Dental Examiners is taking some advantage of his official position and is acting as the good will agent for a mouth wash. So far I have heard no screams from California dentists nor have I received any protests on the subject.

"It's Not What I Expected" . . .

From time to time I see some of the boys who were once students of mine at the University of Illinois. They are often portly below the rib line, tending toward baldness or grey hair, and in general are beginning to show the signs of the years. Recently I met three of these former students at a dental meeting. After fifteen years in practice, they find that the dental world is not what they thought it would be. As one of them poignantly expressed it, "It's not what I expected." But isn't that true of all our worlds of future promise? Is the Presidency, do you suppose, what Mr. Roosevelt thought it would be? As he looked forward to it in the days before his terms of office, he probably saw the glories and the power and the bands playing, "Hail to the Chief!" What he probably did not see very clearly were the critics, the scandalmongers, the responsibilities of a world in volcanic eruption. He probably did not see the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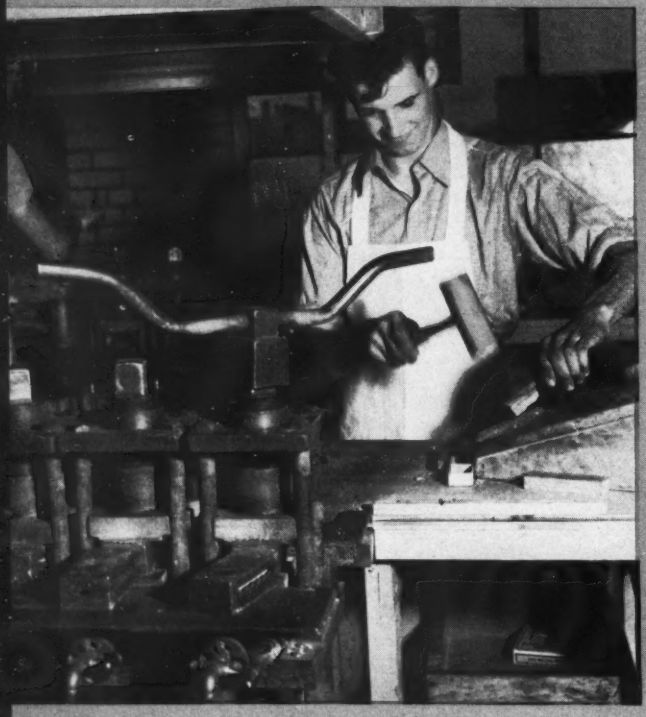

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IS ACHIEVED IN THIS NEW MODERN PLANT

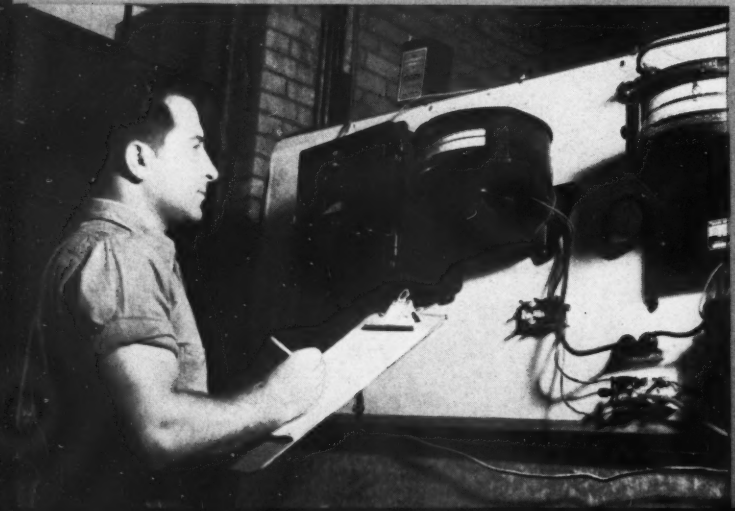
The quality of any product depends on many things. These pictures show a few of the reasons why Dr. Myerson's tooth products have become the world's standard. But back of all this is the creative genius of Dr. Myerson, who believes that nothing is so good that it cannot be made better.

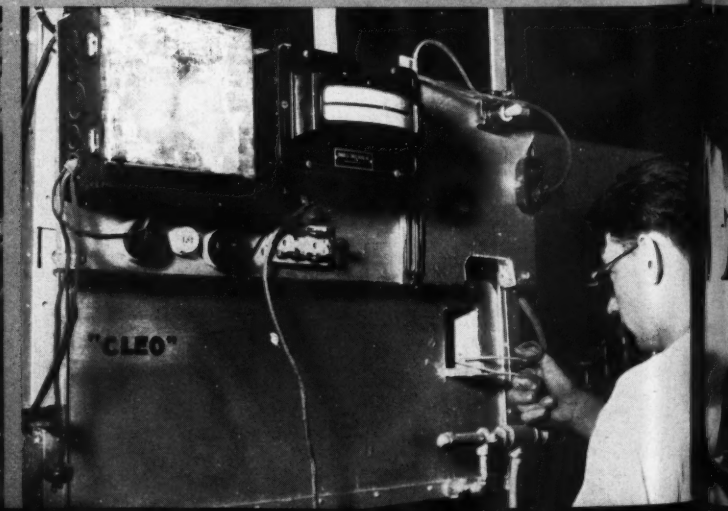
This unending search for perfection, coupled with the unequalled production facilities of the Ideal plant shown here, has given to the dentists of America facilities for the finest denture restorations in the world. Every step, from research to production, has been directed toward the end of Greater Naturalness.

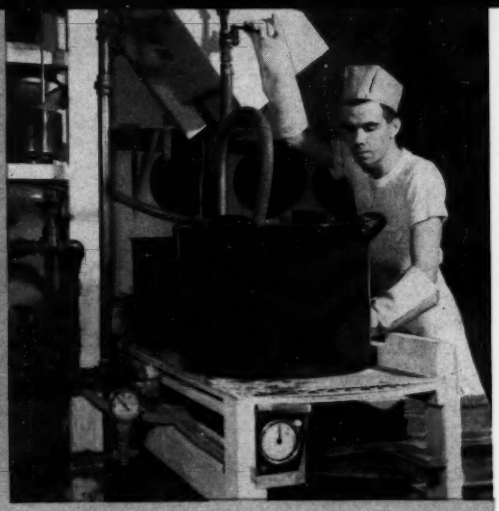
Above
7 HOT BISCUITS is what teeth are called when first knocked out of the mold. The material, before it is molded, is called "dough".

Below
8 TAKING THE READINGS and checking the heat curve in the firing of Myerson Teeth.

Below
9 HEAT TREATMENT, an important step in tooth manufactur controlled here. Like the furnace shown below, this machi Ideal designed and built. Ideal workers have pet names for machines — this worker calls his "Cleo".



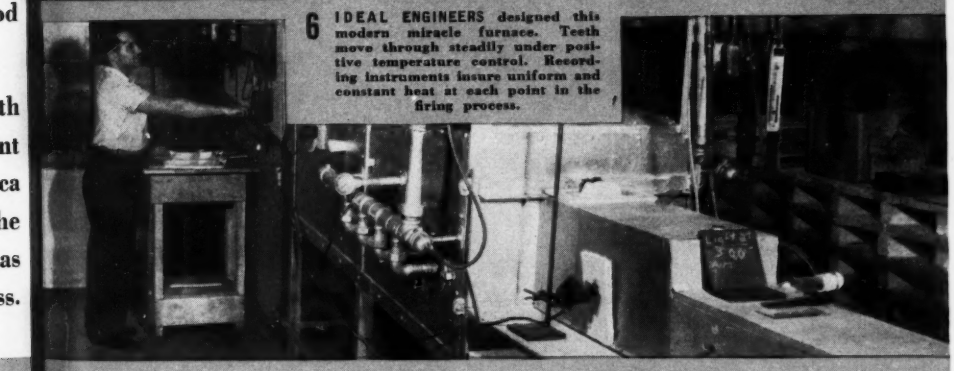




Above
REDUCTION" is the conversion of se-ted raw material to its final exact uni-rmity. Stage after stage of milling and ting insure the absolute purity necessary r True-Blend and Characterized Teeth.

Above
4 HERE IS ANOTHER Ideal Development. The powerful electromagnet shown here removes metallic impurities. A final "washing" takes away even fine dust.

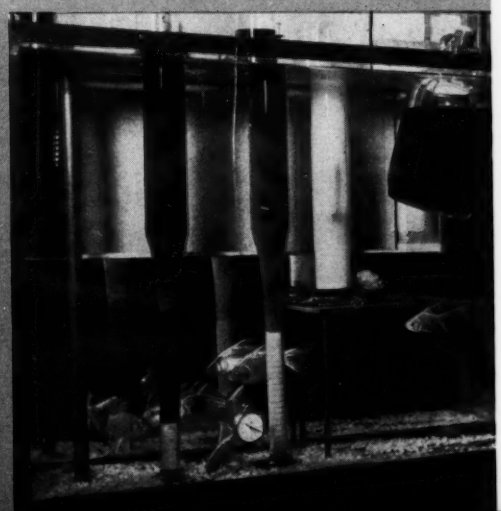
5 FOR MANY YEARS this type of furnace was used. Lack of scientific control made results uncertain. Only one "batch" at a time . . . and the heat in the room was terrific!



6 IDEAL ENGINEERS designed this modern miracle furnace. Teeth move through steadily under positive temperature control. Recording instruments insure uniform and constant heat at each point in the firing process.

low
ODERN TOOTH MANUFACTURE requires ny special tools and dies. The Ideal th has a modern fully equipped ma-ne shop for this purpose.

Below
11 THESE GOLD FISH are on the Ideal payroll too! Their gentle motion through this water bath helps maintain absolute uniformity of temperature essential for this precision test.



WHY CHINA-WARE TEETH ARE GONE FOREVER!

I AM highly gratified at the world-wide response to my contribution to dental art and science. Already in the few short years the old type of tooth has been almost completely discarded. The letters I have received from denture specialists and dental practitioners are no small part of my reward.

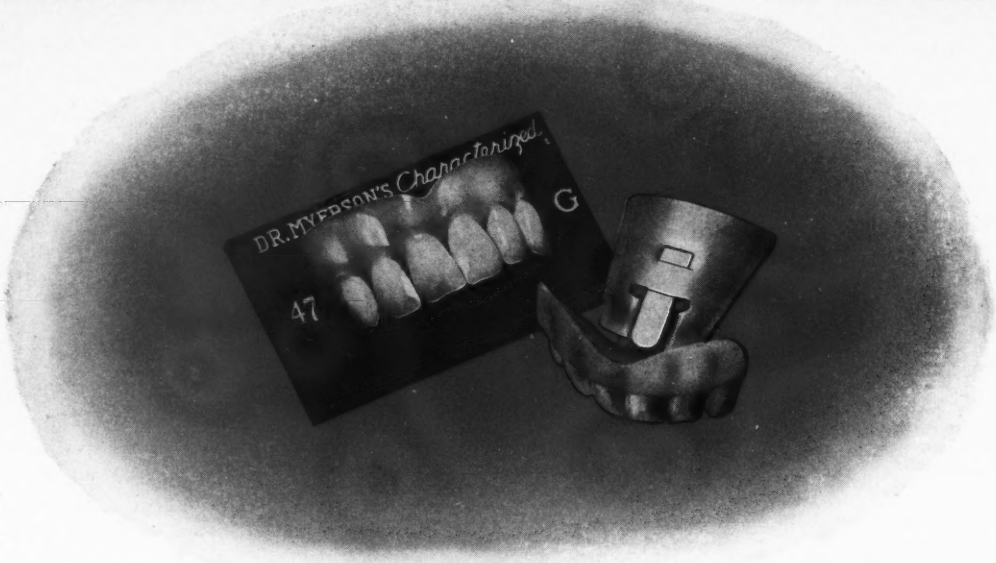
It is a considerable achievement to have disposed for good and all of the Chinaware teeth of yesterday, teeth so easily detectable. These teeth are now completely replaced by my type of teeth which escape detection even by experts. I hope to do still better.

Recently at a Massachusetts dental convention, over 360 dentists were asked to pick out artificial teeth in a partial restoration, involving only the six anteriors. This selection was done at a distance of approximately 12 to 18 inches under a spotlight and less than 15 per cent of the dentists made the correct selection. What a tribute to the great naturalness of these teeth when even dentists cannot tell!

Although the basic principles of Myerson teeth have been widely imitated, their high degree of naturalness has not been achieved by imitators, because this perfection is based on many characteristics and unequalled production facilities. Minute irregularities, stains, cracks, erosions, and, if desired, simulated synthetic fillings, all play their part. The artistic balance of these many characteristics is maintained by the splendidly equipped factory and its especially developed equipment. Every step in manufacture is scientifically guided by men of long experience who take pride in the production of these beautiful teeth and who appreciate the finely equipped factory in which they do their work.

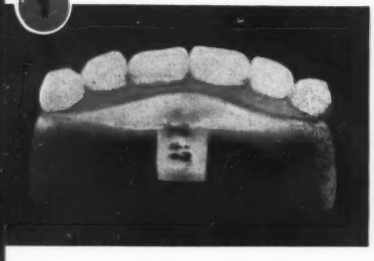
Simon Myerson

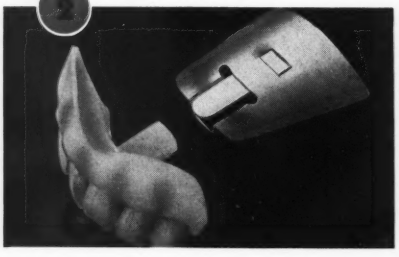
GREATER NATURALNESS in TEETH

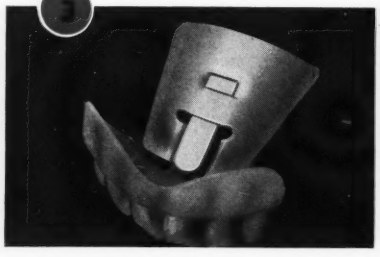


AIDED by IMMEDIATE "TRY-IN"

The above set of Myerson Characterized teeth, with simulations of synthetic fillings or regular True-Blend without fillings, shown just as they are shipped from the factory. The teeth are adjustably set in wax into an acrylic-like holder. . . . Alongside is the same set attached to an immediate retainer. Pictures one to four below illustrate the easy procedure of immediate try-in.







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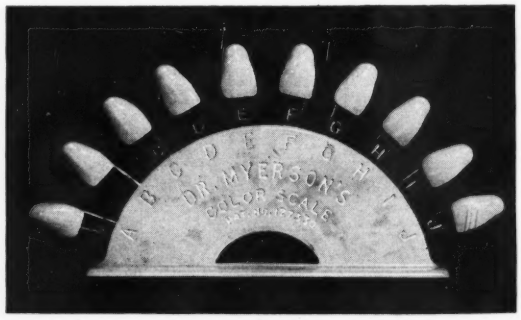

weary burdens that had turned all his prececessors ashen-grey before their time.

Is the fame that Mr. Lindbergh wooed what he expected it to be? He knew the cheering crowds, the adulations of the youth, the flame of hero worship. By many he is now labeled "The Great American Tragedy." Is his fame what he expected it to be?

Shakespeare never lived to reap his glories. If he expected fame and recognition, from all accounts, it is doubtful that he saw the rewards of a successful playwright.

The lad that found that Dentistry isn't what he expected it to be might ask himself in his disappointment whether he gave what he might have to Dentistry. If he expected his profession to give to him while he contributed nothing to it, he was destined for that disappointment he now feels.

Seattle Finds Fault . . .

A letter recently came in from Seattle, which objected to the use of the word "estimate" in reference to the advance determination of a professional fee. This critic comments, "The word estimate looks like a term that tradesmen, i. e., carpenters, etc., use." Since when were tradesmen, that is, "carpenters, etc." inferior people? They may not have the niceties of culture and the clarity of diction that some other people may have but we would be in a sad way were it not for the tailors who sew our clothes, the carpenters and bricklayers who give us shelter, and the grocers who distribute our food. This poseur who objects to our use of the word "estimate" is typical of his kind: quick to criticize but slow to suggest improvement. He offers no substitute for the word.

When someone asks for the fee of a professional service, do you give him a "fee quotation," an "approximate charge," or an "estimate?" Does it matter what you call it? The important factor is that you are telling him what he may expect to pay for the service. It is not unprofessional or undignified to tell people their obligations. It is the honest and natural procedure.

To be sure, dentistry is an important profession, but it is no more important than dozens of other vocations. When

dentists put on airs and look down their noses at folks who have dirty hands and wear overalls, they are trying to elevate themselves to a position that has no justification.

"Corroded Communiqué" . . .

I am indebted to my younger daughter, aged 15, for the expression "corroded communique," which with proper credit, I am appropriating. Every communique sent out by warring factions is, indeed, "corroded"—Moscow is as hard to believe as Berlin, and perhaps London and Washington are not too far behind. Almost every day the mail is loaded with releases from the propaganda departments of the federal government in Washington. Most of these communiques are indeed corroded — corroded with the rust of bureaucracy and the imprint of red tape and the bias of mass conditioning.

Perhaps it would be possible to judge the merits and fallacies of the claims made by participants in modern warfare if a neutral, judicious observing board were appointed to referee the battles and set down its opinions. But, unfortunately such a board would not stay neutral long, because there is something in us that makes neutrality impossible. We want to take sides, to drop the cloak of impartiality and hurl our judgments and our feelings into the arena of contention for the side we like best.

To come out of this collosal arena of modern warfare and enter our own small world of immediate interests, there are corroded communiques issued by the two warring factions even in the field of impression-taking: One group of denture prosthodontists insists that the only way to take impressions is with the mouth open; the other group says that only the contrary is true and that the only technique that is good and serviceable is that which takes the impression with the mouth closed.

You can attend full denture meetings and hear advocates of each system beat their heads off, advancing their open-mouth or closed-mouth arguments. Could a neutral board be appointed to settle the dispute conclusively? I am sure that in time the members of the board would absorb the enthusiasms and quirks and reflect the prejudices and

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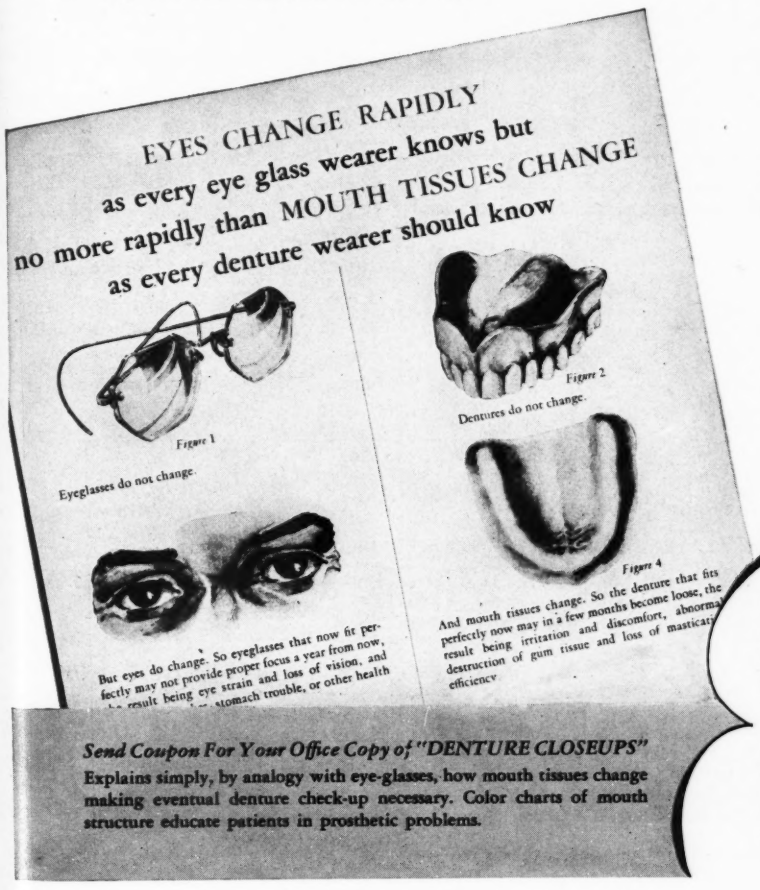

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preferences of the antagonists. Presently the board would be issuing one-sided judgments, not only regarding the technical methods involved but in support of the advocates they liked better. Communiques cannot be free from the prejudices and quirks of governments or men. They are all corroded.

Score One Against the Editor . . .

Now that a wrathful note has been directed against colleagues in the profession, here is one aimed at myself. Too often this editor's face is a deep crimson when he sees such asinine misprints in one of his own editorials as that which appeared in the October issue of this magazine. On The Editor's Page last month the teeth became an index to "systematic" disturbances. Although indexes imply systematic procedures, the human body is not likely to express its disorders in a catalog, and the sentence intended to say, "The teeth are more than an index to *systemic* disturbances—they are victims."

We have a caricature of "the printer's devil" on a wall of the editorial office, but the accusing fingers are only paint. The editor feels like turning in his blue pencils and his eyeshade, and retiring to the country. How such a stupid exchange of words from "systemic" to "systematic" can escape the scrutiny of editors, assistant editors, proof readers, makeup men, and who not, is one of those inexplicable and unpredictable worries in the magazine business. And what about the readers? So far no reader has let it be known whether "systematic" disturbances disturbed him. Or is it the spirit of charity that has deterred readers from calling the error?—E. J. R.

STATE BOARD EXAMINATIONS

New Jersey State Board of Dental Examiners, regular meeting, December 8-12. For information write to Doctor Walter A. Wilson, 150 East State Street, Trenton.

California State Board of Dental Examiners, regular meeting, December 15, Physicians and Surgeons College of Dentistry, San Francisco. For information write to Doctor K. I. Nesbitt, 515 Van Ness Avenue, San Francisco.

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GLOSSARY FOR GAS-OXYGEN ANESTHETIST

(Continued from page 493)

freed from the unconscious discharge of nervous energy under the stimulus of surgery by the use of procaine blocking and relief from fear of a general anesthetic.

Anoxemia or an insufficient concentration of oxygen in the blood.

Anoxia—Lack of oxygen in the tissues.

1. *Anoxic Type*: A condition in which the tension of oxygen in the arterial blood is lower than normal and, consequently, the hemoglobin is not saturated with oxygen to the normal extent.
2. *Anemic Type*: The oxygen tension in the arterial blood is normal, but the quantity of functioning hemoglobin is too small.
3. *Stagnant Type*: The arterial blood is normal in oxygen tension and oxygen content, but is supplied to the tissues in insufficient quantities.
4. *Histotoxic Type*: The tissue cells are poisoned so that they are unable to make effective use of the oxygen supplied to them.

Apnea — Temporary cessation of breathing or absence of respiratory effort.

Argyll Robertson Pupil—The distance reflex is normal, but the response to light is absent; diagnostic of tabes dorsalis in syphilitic patients.

Asphyxia—A condition of insufficient oxygenated blood at the respiratory center, or obstruction of the airway; first signs are the convulsive and irregular breathing in which the expirations are more marked and spasmodic in character.

Ataxia—Muscular incoordination.

Atelectasis—Collapse of large area of lung tissue after a prolonged narcosis.

Bulbar Paralysis—Depression of respiratory center.

Carbonemia—Increased concentration of carbon dioxide in the blood. The effects of carbonemia and anoxemia are the same.

Decarbonization or the reduction of the carbon dioxide concentration of the blood.

Cardiac Ventricular Fibrillation—A wormlike movement of the ventricular muscle. It consists of an unsynchronized contraction and relaxation of the individual muscle fibers which provides no circulation of blood. Death is due to cardiac anoxia.

Cheyne Stokes Breathing—Apneic intervals between short recurrent dyspneic spasms, indicating a partial inertia; no contra-indication for gas-oxygen anesthesia.

Clonic Spasms—First noticed as twitching or jerking in the upper extremities.

Cyanosis—The blue color of reduced hemoglobin transmitted from the capillaries and, to a small extent, from the venules and arterioles through the skin.

Endatracheal Anesthesia—A tube is introduced through the nose into the pharynx, after anesthesia has been introduced with the face inhaler.

Expiration—Passive process, resulting from the relaxation of the contracted muscles of inspiration and the elasticity of the lung tissue.

Hyperpnoea — Increased respiratory volume from any source.

Hypopnoea — Decreased respiratory volume from any source.

Induction—Period of inducing anesthesia.

Fast Induction: Patient is carried into light surgical stage with 100 per cent nitrous oxide, after which oxygen is added.

Inspiration—an active process depending on the contraction of skeletal muscles.

Intermittent Flow—Applied to a gas appliance where gases are shut off on expiration in contradistinction to continuous flow.

Laryngeal Spasm—Spasm of vocal cords due to direct irritation or traumatic injury to other tissues of the body; treatment is forced oxygen.

Minute Volume—The respiratory volume per minute.

Nystagmus—Vertical: Eyeballs shift actively up or down.

Horizontal: The movement is from side to side.

Opisthotonus—Arching of the body; symptom of profound narcosis.

Pharyngeal Spasm—This occurs, as a rule, with robust or plethoric subjects at the moment of loss of consciousness or just before; deep cyanosis appears; eyes protrude; treatment lies in maintenance of oxygen supply.

Parageusia—Disturbance of the sense of taste.

Paralalia—Disordered speech hysteria and violence.

Partial Pressure—Said of a gas in solution; is simply the vapor pressure of the dissolved gas.

Positive Ventilation, Forced—Oxygen as a resuscitory method.

Negative Ventilation—Prone pressure method.

Rebreathing—While the patient is being fed nitrous-oxide and oxygen, the exhalations are collected and mixed with the pure gases so as to control the respiration by means of the small quantities of carbon dioxide in the expired gases.

Respiratory Threshold—The state of irritability of the respiratory center.

Secondary Saturation—The over-stimulated type of patient will often resist the anesthetic. It is necessary, in these cases, to saturate the patient with nitrous-oxide, so that the gas goes further than the active circulating blood.

Shock—a form of hemorrhage and hemorrhage is a form of asphyxia; there is traumatic shock and anesthetic shock; usually these two are working together. Shock is recognized by a falling systolic blood pressure with the pulse increasing in rate and decreasing in volume.

Spastic Spasms—Inadequate oxygen causes the muscles of respiration to become spastic.

Status Lymphaticus—Hyperplastic condition of the thymus gland, particularly in children; an enlarged thymus.

Stertorious Breathing—Prolonged and jerky expirations due to spasm of the respiratory musculature.

Systolic Pressure—Represents the pressure of the blood in the brachial artery at the height of the heart's contraction.

Diastolic Pressure—Indicates pressure at the resting stage of the heart. Pulse Pressure is computed by subtracting the diastolic from the systolic reading.

Tetanic—Intense muscular spasms.

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MERWIN B. MASSOL, *Publisher.*
ROBERT C. KETTERER, *Publication Manager.*
W. EARLE CRAIG, D.D.S., *Associate.*
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EDITORIAL OFFICE—708 Church Street, Evanston, Illinois.

EDWARD J. RYAN, B.S., D.D.S., *Editor.*
ETHEL H. DAVIS, A.B., *Assistant Editor.*

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